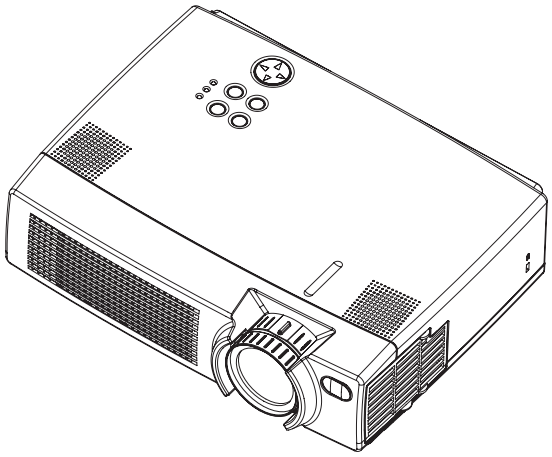
# HITACHI

SM 0521

# SERVICE MANUAL

# CPS370W
(C4S3)



## Caution

Be sure to read this manual before servicing. To assure safety from fire, electric shock, injury, harmful radiation and materials, various measures are provided in this HITACHI Multimedia LCD Projector. Be sure to read cautionary items described in the manual to maintain safety before servicing.

## Service Warning

1. When replace the lamp, to avoid burns to your fingers. The lamp becomes too hot.
2. Never touch the lamp bulb with a finger or anything else. Never drop it or give it a shock. They may cause bursting of the bulb.
3. This projector is provided with a high voltage circuit for the lamp. Do not touch the electric parts of power unit (main), when turn on the projector.
4. Do not touch the exhaust fan, during operation.
5. The LCD module assembly is likely to be damaged. If replacing to the LCD module assembly, do not hold the FPC of the LCD module assembly.
6. Use the cables which are included with the projector or specified.

## Contents


1. Features ---------- 2
2. Specifications ---------- 2
3. Names of each part ---------- 3
4. Adjustment ---------- 5
5. Troubleshooting ---------- 12
6. Service points ---------- 17
7. Block diagram ---------- 22
8. Connector connection diagram ---------- 23
9. Wiring diagram ---------- 24
10. Basic circuit diagram ---------- 30
11. Disassembly diagram ---------- 65
12. Replacement parts list ---------- 67
13. RS-232C communication ---------- 68


**SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.**

# Multimedia LCD Projector


**February 2002** Digital Media Systems Division

# 1. Features

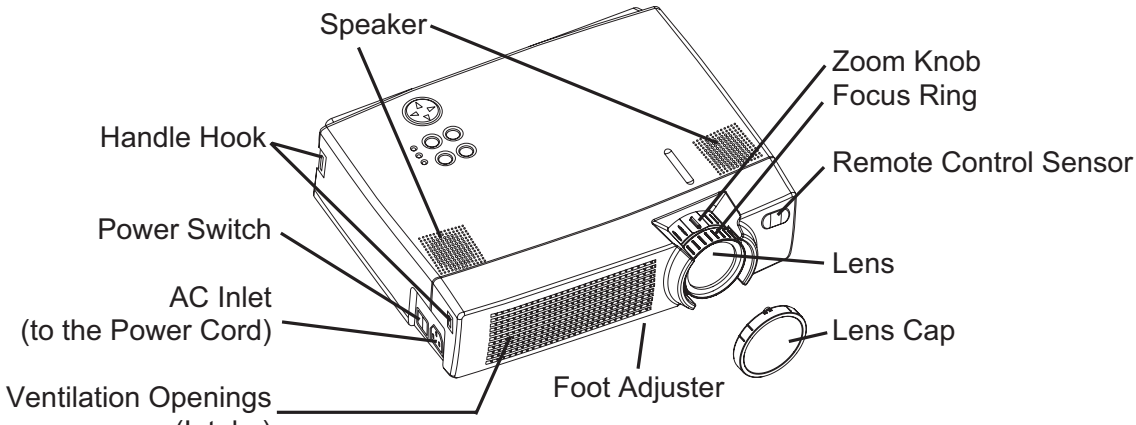
- High brightness, High resolution
- Compact size, light weight for portability
- RS-232C Communication
- Complies with VESA DDC1/2B specifications
- Auto-adjustment function

# 2. Specifications

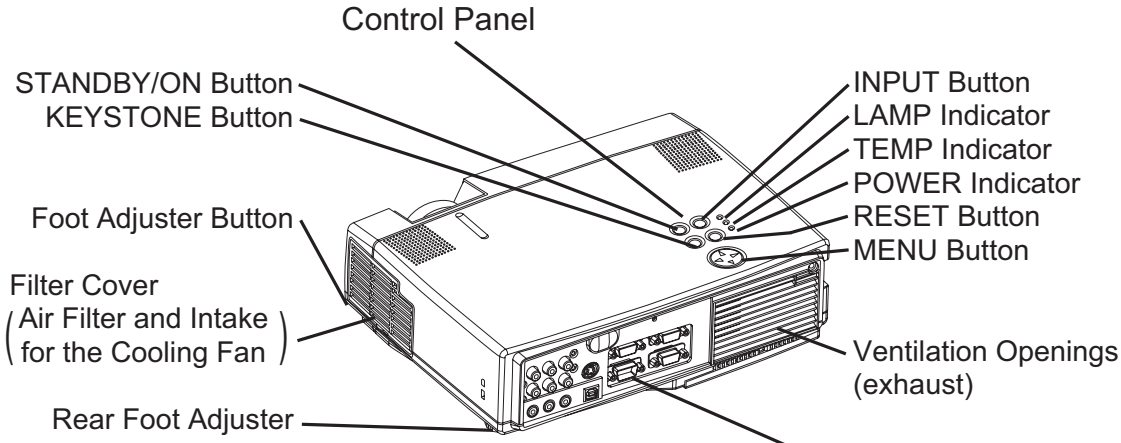
| | | | |
|---|---|---|---|
| Liquid crystal panel | Drive system | | TFT active matrix |
| | Panel size | | 0.9 inches |
| | Number of pixels | | 800 (H) × 600 (V) |
| Lamp | | | 200W UHB |
| RGB signal input | RGB IN | 1 | Video: Analog 0.7Vp-p, 75Ω terminator<br>H/V. sync.: TTL level (positive/negative)<br>Composite sync.: TTL level<br>D-sub 15-pin shrink jack |
| | | 2 | |
| | AUDIO IN | 1 | 200mVrms, 47kΩ (max. 3.0Vp-p)<br>Stereo mini jack |
| | | 2 | |
| Video signal input | VIDEO IN | | 1.0Vp-p, 75Ω terminator<br>RCA jack |
| | S-VIDEO IN | | Brightness signal: 1.0Vp-p, 75Ω terminator<br>Color signal: 0.286Vp-p (NTSC, burst signal), 75Ω terminator<br>0.300Vp-p (PAL/SECAM, burst signal), 75Ω terminator<br>Mini DIN 4-pin jack |
| | COMPONENT VIDEO | Y | 1.0Vp-p, 75Ω terminator (positive) |
| | | $C_B/C_R$ | 0.7Vp-p, 75Ω terminator (positive) |
| | | $P_B/P_R$ | 0.7Vp-p, 75Ω terminator (positive) |
| | AUDIO IN | L | 200mVrms, 50kΩ (max. 3.0Vp-p)<br>RCA jack |
| | | R | |
| Signal output | RGB OUT | | Video: Analog 0.7Vp-p, 75Ω output impedance (positive)<br>H/V. sync.: TTL level (positive/negative)<br>Composite sync.: TTL level<br>D-sub 15-pin shrink jack |
| | AUDIO OUT | | 200mVrms, output impedance 1kΩ (max. 3.0Vp-p)<br>Stereo mini jack |
| Audio input | | | 200mVrms, 47kΩ |
| Speaker output | | | 1W +1W (stereo) |
| Power supply | | | AC100~120V/3.3A, AC220~240V/1.4A |
| Power consumption | | | 310W |
| Dimensions | | | 298 (W) × 94.6 (H) × 228 (D) mm |
| Weight | | | 3.25kg (7.2lbs) |
| Temperature range | | | Operation : 0~35°C<br>Storage : -20~60°C |
| Accessories | | | Remote control transmitter × 1<br>RGB cable × 1<br>Component cable × 1<br>Mouse cable (PS/2) × 1<br>POWER cord × 3<br>Battery (inside Remote control transmitter)× 1<br>Carrying bag × 1<br>Handle × 1<br>User's manual (with Safety Instructions)× 1 |

## *3. Names of each part*

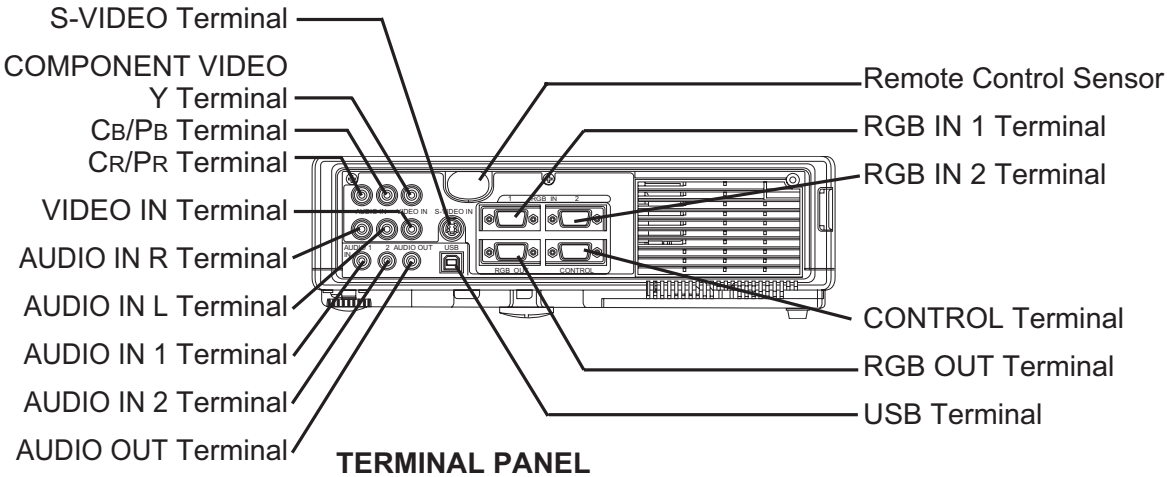
### ● Parts names




**FRONT/LEFT VIEW OF THE PROJECTOR**

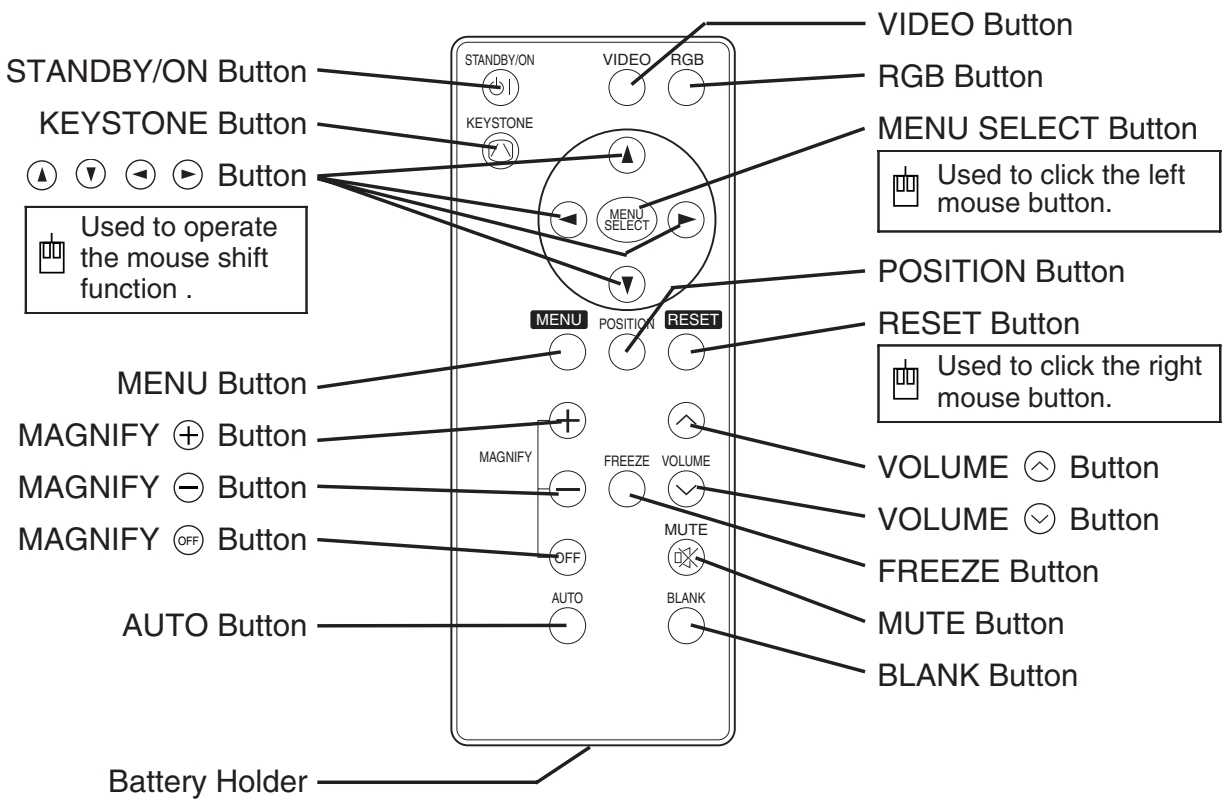



**REAR/RIGHT VIEW OF THE PROJECTOR**




**TERMINAL PANEL**

## ● Remote control transmitter




These functions works when the mouse control function is activated. Remember, the POSITION,VOLUME, KEYSTONE, BLANK ON and MENU ON functions disable the mouse control function.

**NOTE** • Keep the remote controller away from children and pets.
- Do not give the remote controller any physical impact. Take care not to drop.
- Do not place the heavy objects on the remote controller.
- Do not wet the remote controller or place it on any wet object.
- Do not place the remote controller close to the cooling fan of the projector.
- Do not disassemble the remote controller.

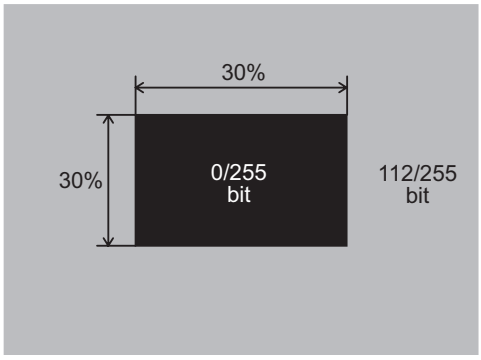
# 4. Adjustment

## 4-1 Before adjusting

1. Before starting adjustment, warm up the projector for about 10 minutes.(Blank white)
2. Set Zoom Wide to Max. And project an image a distance of more than 40 inches and set the normal at “WHISPER” mode.
3. Normalizing the video adjustment.
   (Press the [MENU] button of the Remote control transmitter to display the Setup menu, and then press the [RESET] button. And select the [DEFAULT].)
   *note : The setup menu is not displayed on with no signal.
4. Perform all adjustments from the Adjustment menu. Perform the following operations to display the Adjustment menu.
   a. Press the [MENU] button of the Remote control transmitter (the Setup menu will appear).
   b. Next, press the [RESET] button one time. And press the [RESET] button again for 5 seconds or more (the Adjustment menu will appear).

## 4-2 Ghost adjustment

**Signals for internal adjustment**

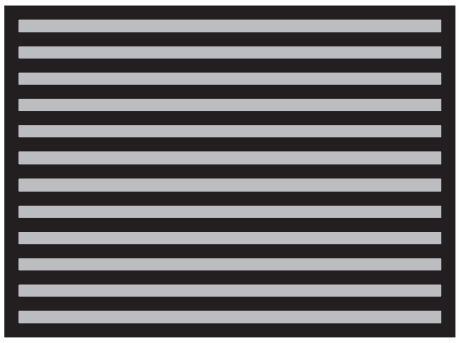



**Adjustment procedure**

1. Use DAC-P - GHOST - R: in the Adjustment menu to adjust so that R color ghost is at a minimum.
   (Set the adjustment value to default, and then raise the value. When a ghost appears to the left of a vertical line, reduce the value by 2 steps.)
2. In the same way, use DAC-P - GHOST-G: in the Adjustment menu to adjust so that G color ghost is at a minimum.
3. In the same way, use DAC-P - GHOST-B: in the Adjustment menu to adjust so that B color ghost is at a minimum.

## 4-3 Flicker adjustment (V.COM adjustment)

**Signals for internal adjustment**

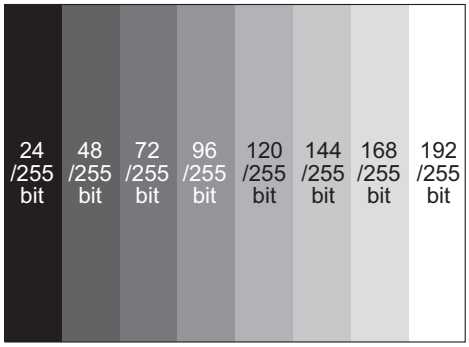


**Adjustment procedure**

1. Make this adjustment after completing the adjustment in 4-2 Ghost adjustment.
2. Use DAC-P - V.COM - R: in the Adjustment menu to adjust so that the flicker at the center of the screen is less than the flicker at the periphery.
   (When the flicker is about the same across the whole screen, adjust so that the flicker at the center of the screen is somewhat less than elsewhere.)
3. In the same way, use DAC-P - V.COM-G: in the Adjustment menu to adjust the G color flicker.
4. In the same way, use DAC-P - V.COM-B: in the Adjustment menu to adjust the B color flicker.

## 4-4 NRSH adjustment (vertical stripe adjustment)

**Signals for internal adjustment**




**Adjustment procedure**

1. Make this adjustment after completing the adjustment in 4-3 Flicker adjustment.
2. Use DAC-P - NRSH - R: in the Adjustment menu to adjust so that the vertical lines spaced every 6 or 12 dots are as inconspicuous as possible.
   (Reduce the adjustment value when black stripes appear in the 2nd or 3rd tone from the black side. Note that when the adjustment value is lowered, white stripes may appear in the 2nd or 3rd tone from the bright side. Should this happen, adjust so that the stripes are as inconspicuous as possible.)
3. In the same way, use DAC-P - NRSH - G: in the Adjustment menu to adjust vertical stripes of G color.
4. In the same way, use DAC-P - NRSH - B: in the Adjustment menu to adjust vertical stripes of B color.

## 4-5 White balance adjustment

**Preparations**

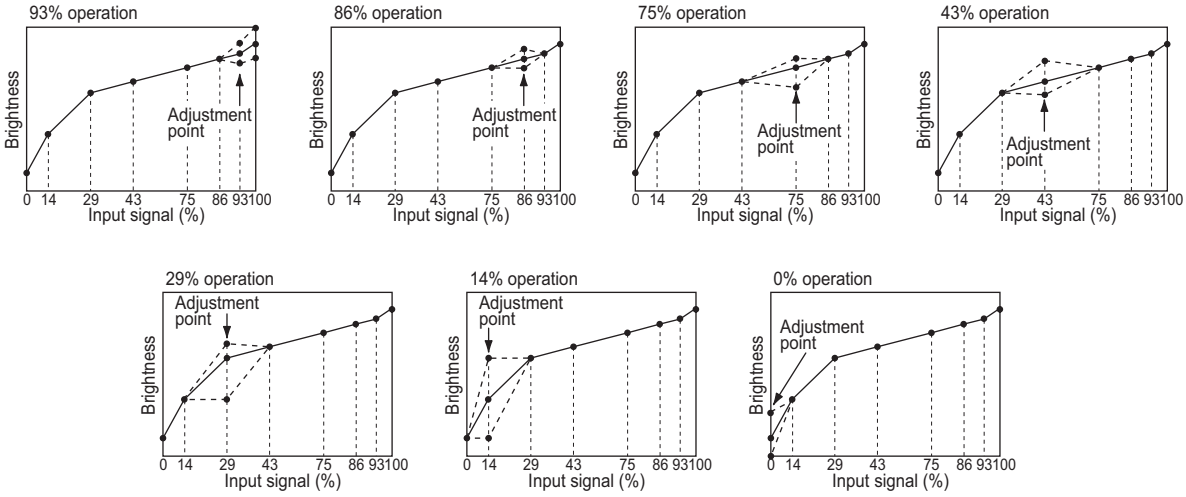
1. Perform these adjustments after the NRSH adjustment described in Section 4-4.
2. Reset gamma correction before adjustment.
   - Place the cursor on [GAMMA] in the Adjustment menu, press the [RESET] key and select [DEFAULT].
   - Now press the [RESET] key again and press the [MGNIFY-OFF] button of the Remote control transmitter for 5 seconds or more (the confirming to “MICRO” reset menu will appear).

**Adjustment procedure**

1. First, adjust the G color.
2. BRIGHT and CONTRAST set to MAX in the Setup menu.
3. Place the cursor on Slide Show in the Adjustment menu [A/D], press the [▶] key three times to display G monochrome and adjust the luminance at the center of the screen. Make a note of the setting (here assumed to be A [lx]). Press the MENU key to return.
4. BRIGHT and CONTRAST is returned to default in the Setup menu.
5. Adjust Gamma, SHIFT, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
   Y = A x 0.798 ± 1 [%]
6. Adjust Gamma, 86%, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
   Y = A x 0.675 ± 1 [%]
7. Adjust Gamma, 75%, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
   Y = A x 0.504 ± 1 [%]
8. Adjust Gamma, 43%, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
   Y = A x 0.147 ± 2 [%]
9. Adjust Gamma, 29%, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
   Y = A x 0.060 ± 2 [%]
10. Adjust Gamma, 14%, and G: in the Adjust menu so that luminance (Y) at the center of the screen is adjusted as follows.
    Y = A x 0.014 ± 2 [%]

11. Adjust Gamma, 0%, G: and R: and B: so that the following values.
    [0%][R:] = -96 - [SHIFT][R:]
    [0%][G:] = -96 - [SHIFT][G:]
    [0%][B:] = -112 - [SHIFT][B:]
12. Now, adjust the R and B colors.
13. Adjust Gamma, 86%, R: and B: so that the color coordinates (x, y) at the center of the screen take on the following values.
    x = 0.290 ± 0.001
    y = 0.350 ± 0.002
14. Adjust Gamma, 93%, R: and B: so that the following values.
    [93%][R:] = [86%][G:]
    [93%][B:] = [86%][B:]
15. Adjust Gamma, 75%, R: and B: so that the color coordinates (x, y) at the center of the screen take on the following values.
    x = 0.284 ± 0.001
    y = 0.340 ± 0.002
16. Adjust Gamma, 43%, R: and B: so that the color coordinates (x, y) at the center of the screen take on the following values.
    x = 0.280 ± 0.001
    y = 0.340 ± 0.002
17. Adjust Gamma, 29%, R: and B: so that the color coordinates (x, y) at the center of the screen take on the following values.
    x = 0.270 ± 0.001
    y = 0.330 ± 0.002
18. Adjust Gamma, 14%, R: and B: so that the color coordinates (x, y) at the center of the screen take on the following values.
    x = 0.260 ± 0.001
    y = 0.300 ± 0.002

**Adjustment operations (reference)**

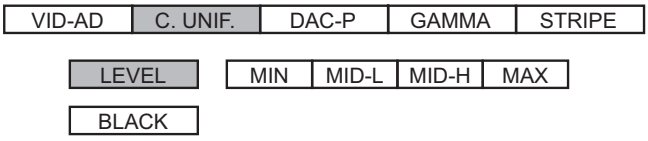


## 4-6 Color uniformity adjustment

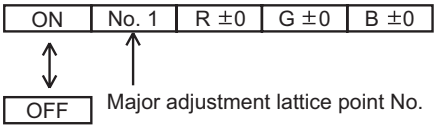
**Preparations**

1. Perform these adjustments after the white balance adjustment described in Section 4-5.
2. Make a color uniformity adjustment for the following four tones.
   - MIN tone (approx. 10% input signal)
   - MID-L tone (approx. 21% input signal)
   - MID-H tone (approx. 50% input signal)
   - MAX tone (approx. 75% input signal)
3. Place the cursor on the tone to be adjusted in the Adjust menu and press the [▼] key. This displays the Adjust Tone menu at the bottom of the screen. Select the major adjustment lattice point No. and color, and then adjust them.
4. The major adjustment lattice point numbers (a total of 17 points) corresponds to the major adjustment lattice point positions in the diagram on the right. The color uniformity of the entire screen can be adjusted by adjusting the white balance for each of the points starting in order from the low numbers.
5. Adjustment point No.1 should not be adjusted, because it controls the brightness of the entire screen.
6. To temporarily turn correction off, place the cursor on “ON” in the Adjust Tone menu and press the [▼] key. To turn it on again, place the cursor on OFF in the Adjust Tone menu and press the [▲] key.
7. Although this adjustment can also be made using internal signals, we will here use the [MENU SELECT] key on the Remote control transmitter to select the following two signals.
   - Solid monochrome adjustment color (use G color adjustment when a color differential meter is used).
   - Solid white (use for adjustment other than above).
8. Reset color-shading correction before adjustment.
   - When 4 tones and all colors are to be reset, place the cursor on [C.UNIF.] in the Adjustment menu, press the [RESET] key and select [DEFAULT].
   - When only 1 tone is to be reset, place the cursor on the tone to be reset, press the [RESET] key and select [DEFAULT].
   - Single tone and monochrome resets cannot be performed.

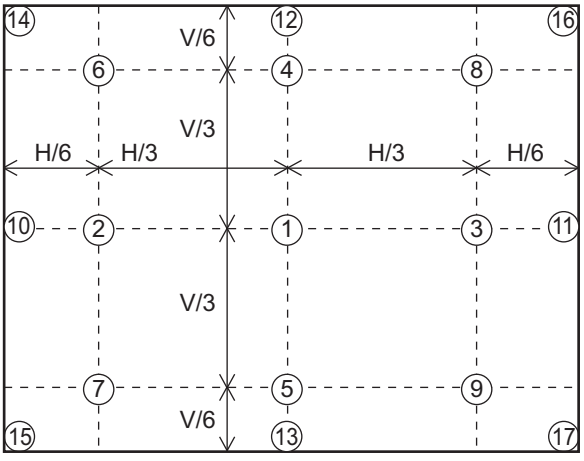
Adjust menu




Adjust Tone menu




Major adjustment lattice point position



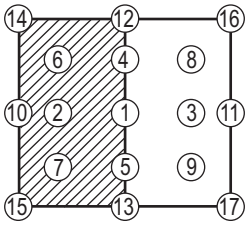
**Adjustment procedure 1**
**(when a color differential meter is used)**

1. First adjust [MID-L] tone [G:].
2. Select adjustment point [No.2][G:].
   When the background is not [G] monochrome, press the [MENU SELECT] key on the Remote control transmitter to change to solid [G] monochrome.
3. Measure the illumination at adjustment points No. 2, No.3, No.10 and No.11.
   The values should be:
   No.2 = Y2 [lx]  No.10 = Y10 [lx]
   No.3 = Y3 [lx]  No.11 = Y11 [lx]
4. No.2 and No.3 adjustment point have the average of Y2 and Y3.
   Y2 = ( Y2 + Y3 ) / 2 ± 2 [%]
   Y3 = ( Y2 + Y3 ) / 2 ± 2 [%]
5. No.10 and No.11 adjustment point have the average of Y10 and Y11.
   Y10 = ( Y10 + Y11 ) / 2 ± 2 [%]
   Y11 = ( Y10 + Y11 ) / 2 ± 2 [%]
6. Then adjust [MID-L] tone [R] and [B].
   When the background is [G] monochrome, press the [MENU SELECT] key on the Remote control transmitter to change to solid white.
7. Measure the color coordinates of adjustment point [No.1] and make a note of them.
   Assume that they are x = x1, y = y1.
   **Note:** When the CL-100 color and color difference meter is used, the [△](delta) mode is convenient. When adjustment point [No.1] color coordinate has been selected, set the slide switch on the side to [△](delta) while holding down the [F] button on the front panel. The measurement shown after this displays the deviation from measurement point 1.
8. Measure the color coordinates of measurement point [No.2] and adjust [No.2][R:] and [B:] so that the coordinates are as follows.
   x = x1 ± 0.005 , y = y1 ± 0.010
9. Similarly, measure adjustment points [No.3] to [No.17] and adjust their color coordinates starting in order from the small number points.
   This completes adjustments required for [MIN].
   **Note:** Since excessive correction may lead to a correction data overview during internal calculations, use the following values for reference.
   [No.2] to [No.5] ± 40 or less
   [No.6] to [No.9] ± 50 or less
   [No.10] to [No.13] ± 70 or less
   [No.14] to [No.17] ± 120 or less
10. Then adjust [MIN] tone [G] so that the adjustment data set two times as much as [MID-L] tone [G].
    This completes [G] color adjustments.
11. Then adjust [MIN] tone [R] and [B].
    Select [No.2] [B:] and press the [MENU SELECT] key on the Remote control transmitter to change to solid white.
12. Measure the color coordinates of adjustment point [No.1] and make a note of them.
    Assume that they are x = x1, y = y1.
13. Now measure the color coordinates of measurement point [No.2] and adjust [No.2][R:] and [B:] so that the coordinates are as follows.
    x = x1 ± 0.005 , y = y1 ± 0.010 (Target)
    x = x1 ± 0.020 , y = y1 ± 0.040
14. Similarly, measure adjustment points [No.3] to [No.17] and adjust their color coordinates starting in order from the small number points.
    This completes [MIN] tone adjustments.
15. Now make similar adjustments for [MID-H] tone.
    (Adjust [MID-H] tone [G] so that the adjustment data set half as many as [MID-L] tone [G].)
16. Now make similar adjustments for [MAX] tone.
    (Adjust [MAX] tone [G] so that the adjustment data set half as many as [MID-L] tone [G].)

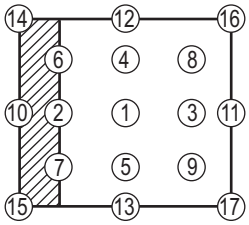
**Adjustment procedure 2**
**(visual inspection)**

1. First adjust [MIN] tone [G:].
2. Select [No.2] [G:].
   If the background is [G] monochrome, press the [MENU SELECT] key on the Remote control transmitter to change to solid white.
3. View measurement point [No.2] and [No.3].
   Lower the [G] color intensity only of the color point whose [G] color is more intense than measurement point [No.1].
4. View measurement point [No.10] and [No.11].
   Lower the [G] color intensity only of the color point whose [G] color is more intense than measurement point [No.1], and raise the intensity of the point whose color intensity is lower than measurement point [No.1].
5. Now adjust the [MIN] tone for colors [R] and [B].
6. View measurement points [No.2], [No.3], [No.10] and [No.11]. Adjust the [R] and [B] of each measurement point so that they have the same color as measurement point [No.1].
   **Adjustment technique:**
   First, adjust [B:] of the point whose color is to be adjusted so that it approximates that of [No.1]. If [R:] is low at this time, the image will have cyan cast, in which case [R:] is increased. On the other hand, if [R:] is excessive, the image will have a magenta cast, in which case [R:] is decreased.
   Overall, a cyan cast makes it easy to see color shading.
7. Next, view measurement points [No.4], [No.5], [No.12], [No.13] and make similar adjustments.
8. Then adjust measurement points [No.6], [No.7], [No.8], [No.9], [No.14], [No.15], [No.16] and [No.17].
   This completes the [MIN] tone adjustments.
9. Make similar another three tones as described in steps 1 to 8 above.

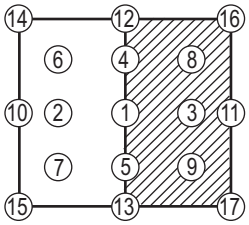
No. 2 deviation range



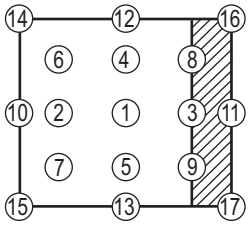

No. 10 deviation range



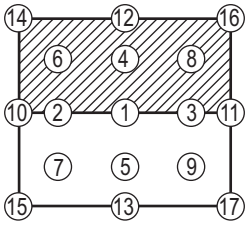

No. 3 deviation range



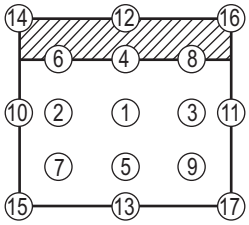

No. 11 deviation range



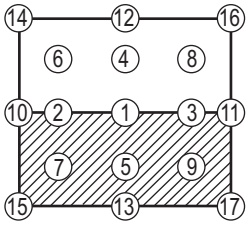

No. 4 deviation range



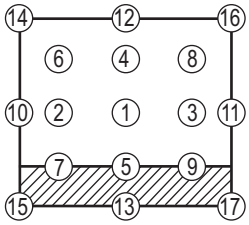

No. 12 deviation range



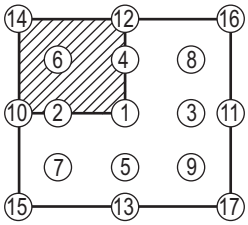

No. 5 deviation range



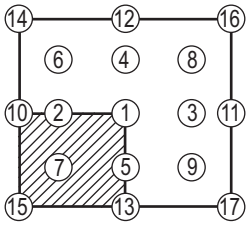

No. 13 deviation range



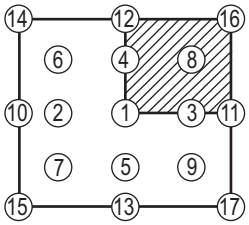

No. 6 deviation range



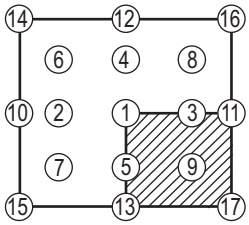

No. 7 deviation range



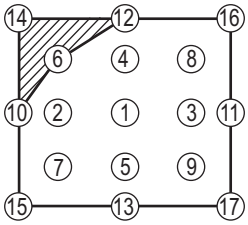

No. 8 deviation range



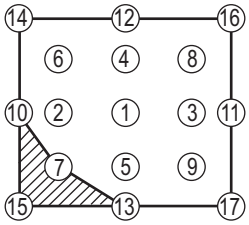

No. 9 deviation range



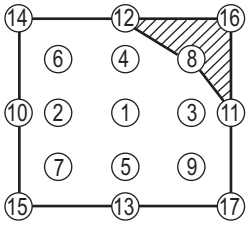

No. 14 deviation range



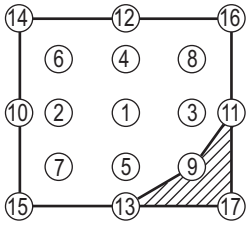

No. 15 deviation range




No. 16 deviation range

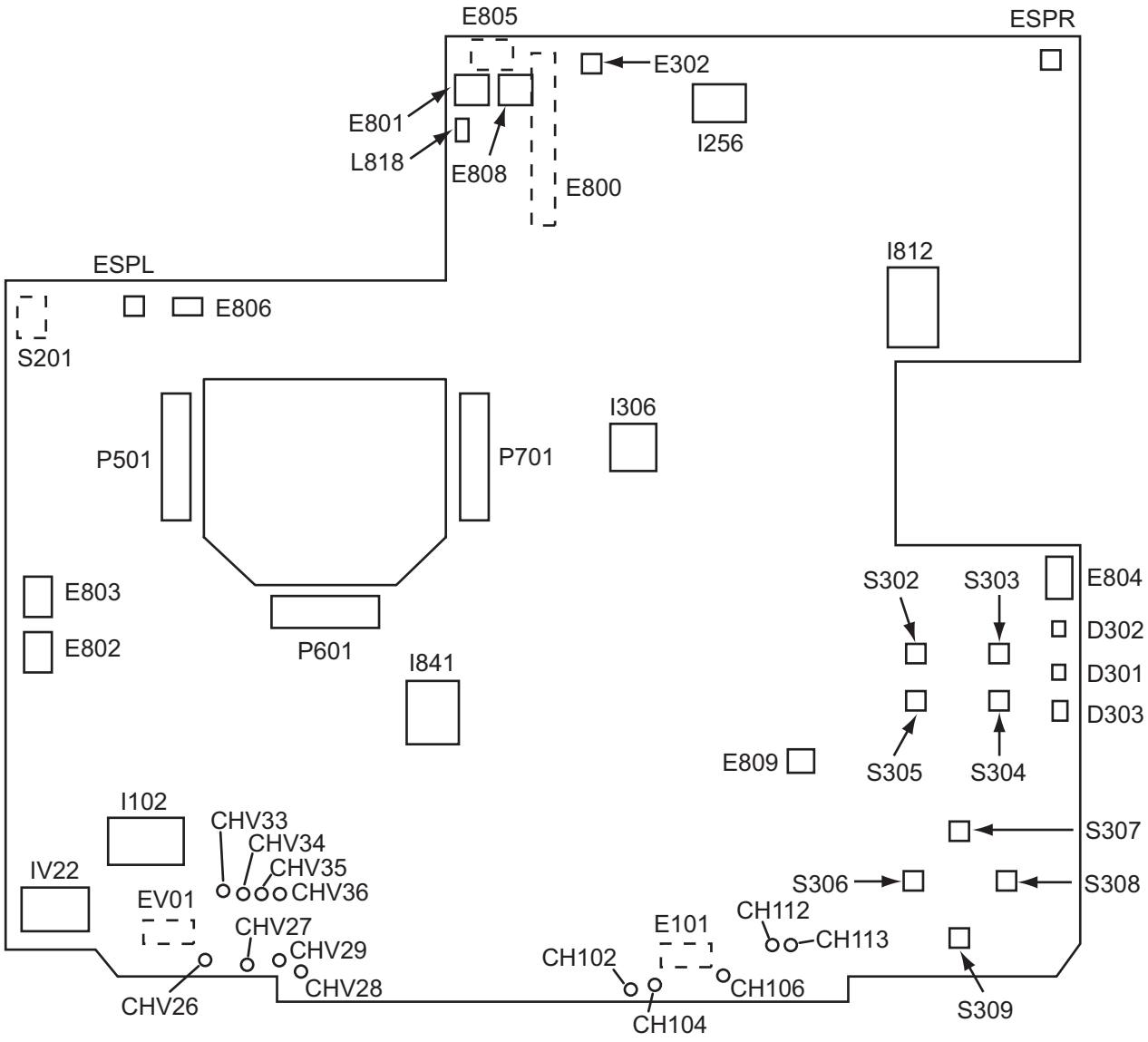


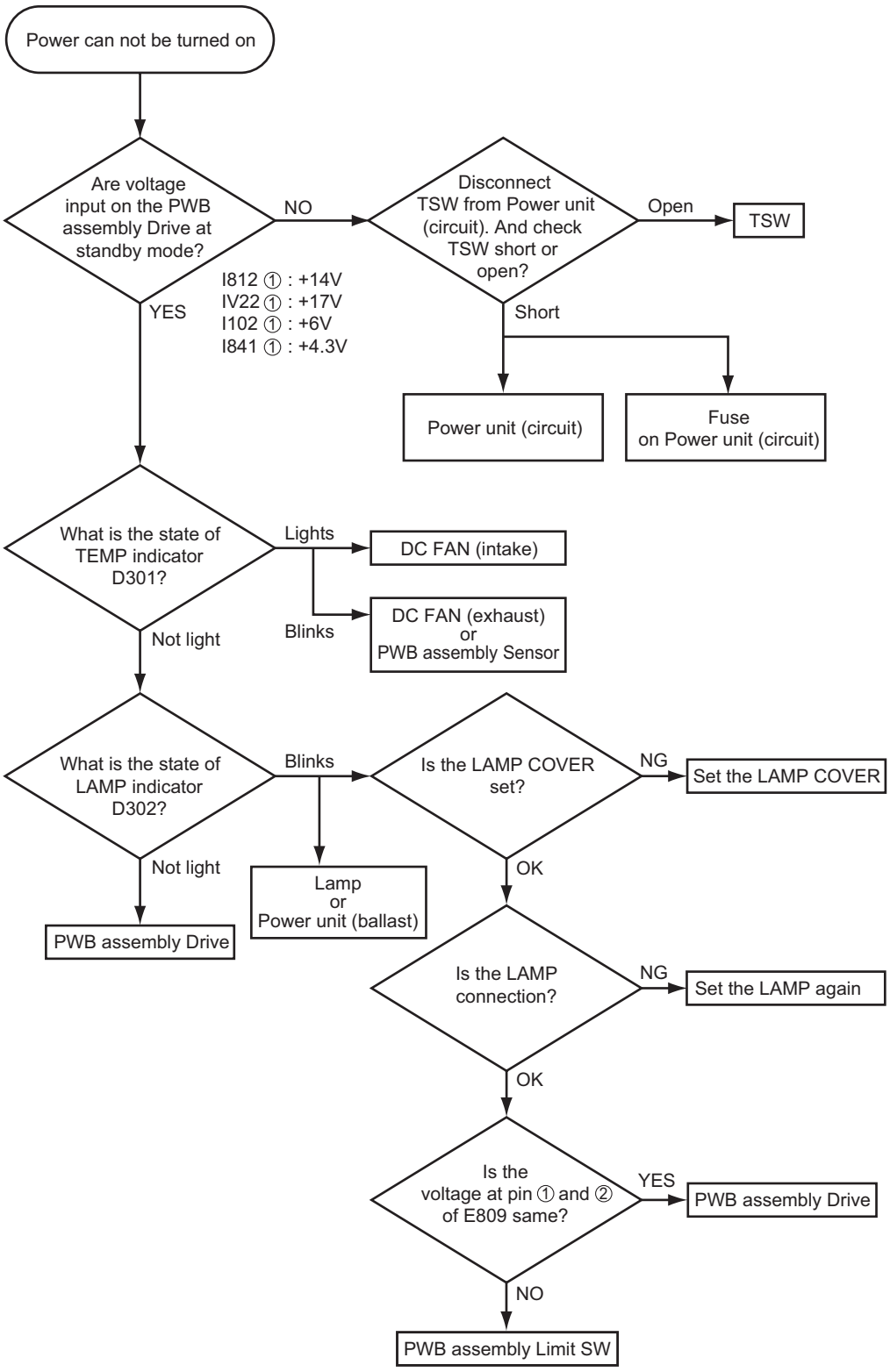

No. 17 deviation range

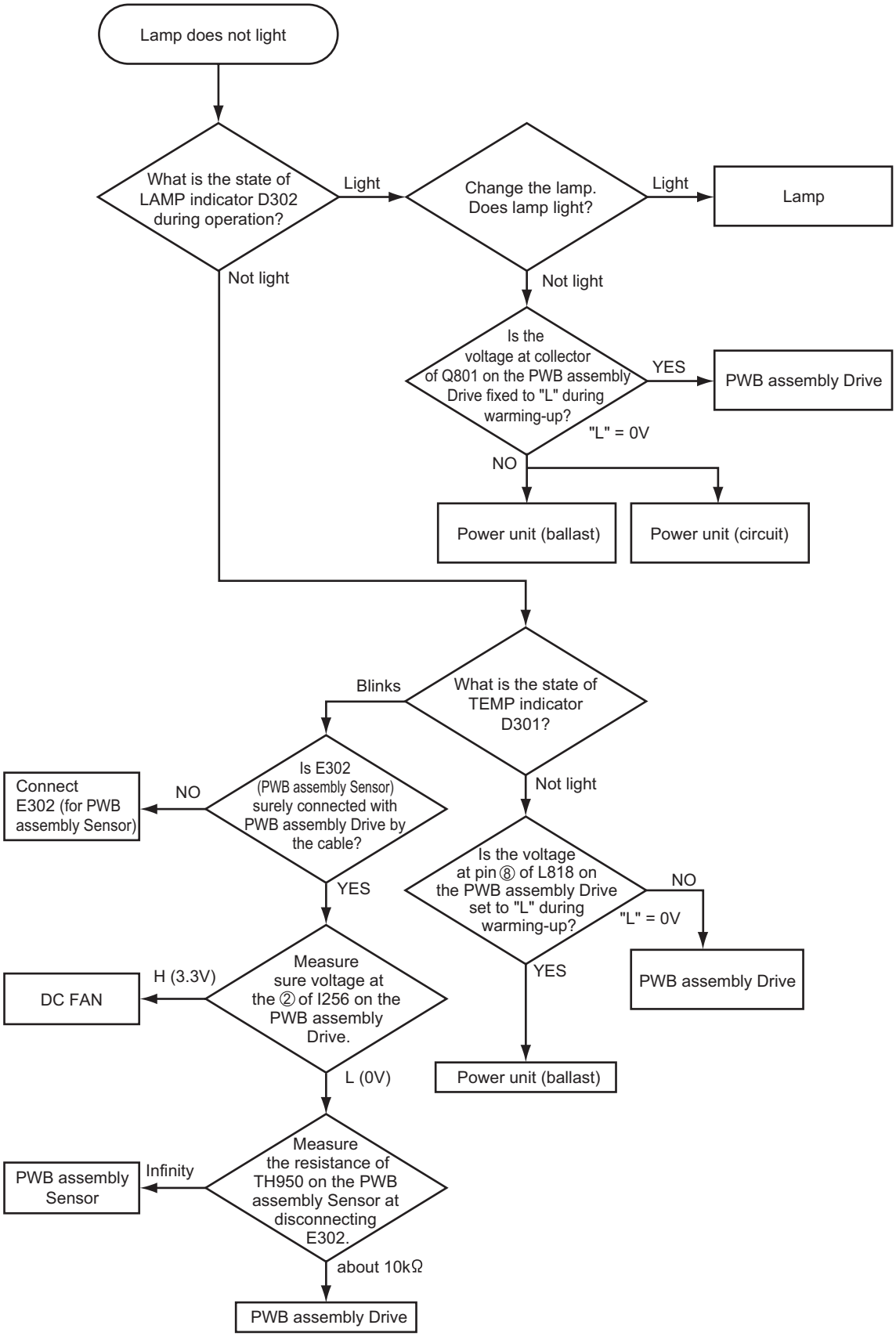


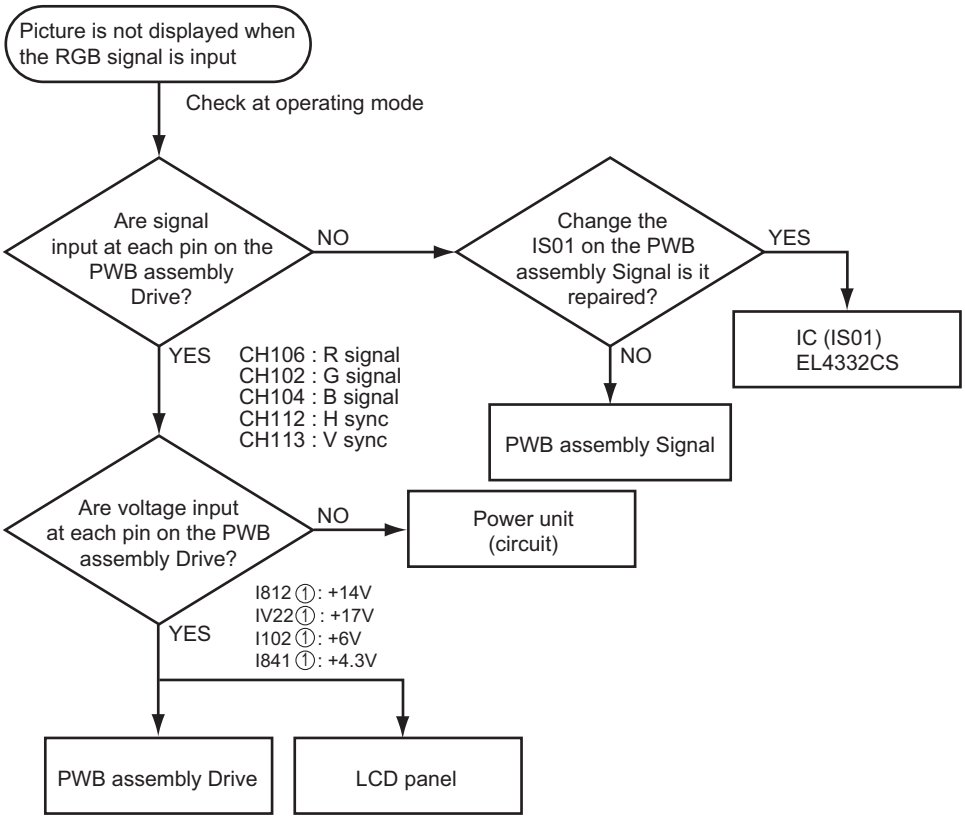
# 5. Troubleshooting

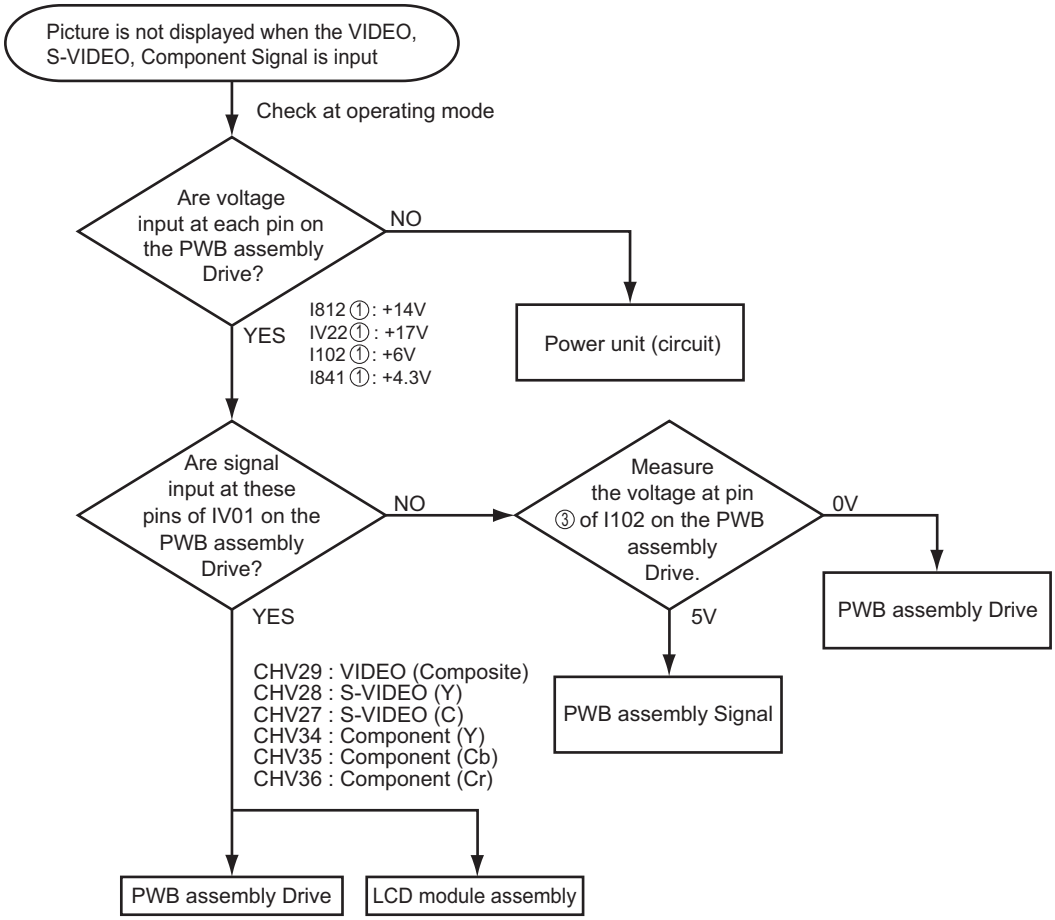
## Check points at trouble shooting

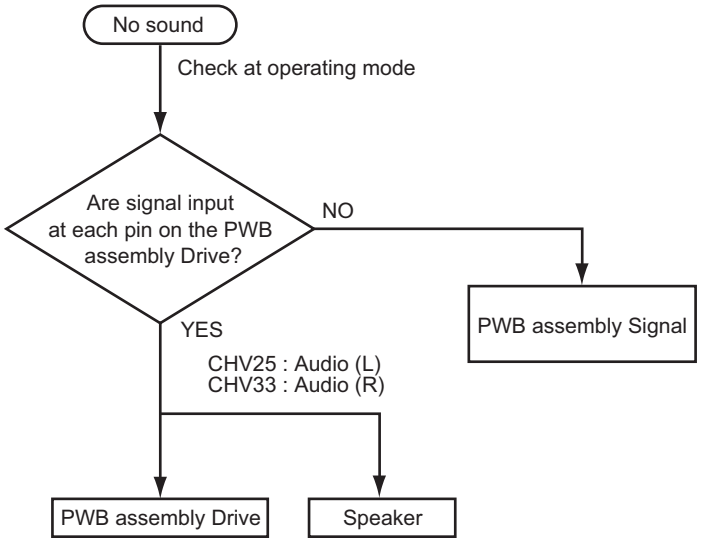


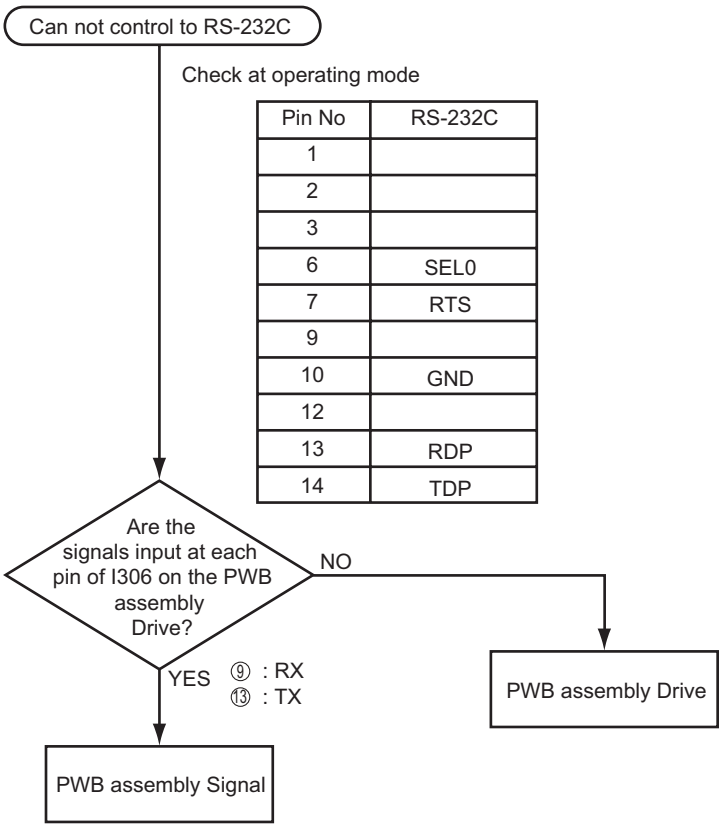

Power can not be turned on
Are voltage input on the PWB assembly Drive at standby mode?
NO
Disconnect TSW from Power unit (circuit). And check TSW short or open?
Open
TSW
Short
Power unit (circuit)
Fuse on Power unit (circuit)
YES
I812 ① : +14V
IV22 ① : +17V
I102 ① : +6V
I841 ① : +4.3V
What is the state of TEMP indicator D301?
Lights
DC FAN (intake)
Blinks
DC FAN (exhaust) or PWB assembly Sensor
Not light
What is the state of LAMP indicator D302?
Blinks
Is the LAMP COVER set?
NG
Set the LAMP COVER
Not light
PWB assembly Drive
Lamp or Power unit (ballast)
OK
Is the LAMP connection?
NG
Set the LAMP again
OK
Is the voltage at pin ① and ② of E809 same?
YES
PWB assembly Drive
NO
PWB assembly Limit SW


Lamp does not light
What is the state of LAMP indicator D302 during operation?
Light
Change the lamp. Does lamp light?
Light
Lamp
Not light
Not light
Is the voltage at collector of Q801 on the PWB assembly Drive fixed to "L" during warming-up?
YES
PWB assembly Drive
"L" = 0V
NO
Power unit (ballast)
Power unit (circuit)
What is the state of TEMP indicator D301?
Blinks
Not light
Is E302 (PWB assembly Sensor) surely connected with PWB assembly Drive by the cable?
NO
Connect E302 (for PWB assembly Sensor)
YES
Is the voltage at pin ⑧ of L818 on the PWB assembly Drive set to "L" during warming-up?
NO
"L" = 0V
PWB assembly Drive
YES
Power unit (ballast)
Measure sure voltage at the ② of I256 on the PWB assembly Drive.
H (3.3V)
DC FAN
L (0V)
Measure the resistance of TH950 on the PWB assembly Sensor at disconnecting E302.
Infinity
PWB assembly Sensor
about 10kΩ
PWB assembly Drive


Picture is not displayed when the RGB signal is input
Check at operating mode
Are signal input at each pin on the PWB assembly Drive?
NO
Change the IS01 on the PWB assembly Signal is it repaired?
YES
IC (IS01) EL4332CS
NO
PWB assembly Signal
YES
CH106 : R signal
CH102 : G signal
CH104 : B signal
CH112 : H sync
CH113 : V sync
Are voltage input at each pin on the PWB assembly Drive?
NO
Power unit (circuit)
YES
I812 ① : +14V
IV22 ① : +17V
I102 ① : +6V
I841 ① : +4.3V
PWB assembly Drive
LCD panel


Picture is not displayed when the VIDEO, S-VIDEO, Component Signal is input
Check at operating mode
Are voltage input at each pin on the PWB assembly Drive?
NO
Power unit (circuit)
YES
I812 ① : +14V
IV22 ① : +17V
I102 ① : +6V
I841 ① : +4.3V
Are signal input at these pins of IV01 on the PWB assembly Drive?
NO
Measure the voltage at pin ③ of I102 on the PWB assembly Drive.
0V
PWB assembly Drive
5V
PWB assembly Signal
YES
CHV29 : VIDEO (Composite)
CHV28 : S-VIDEO (Y)
CHV27 : S-VIDEO (C)
CHV34 : Component (Y)
CHV35 : Component (Cb)
CHV36 : Component (Cr)
PWB assembly Drive
LCD module assembly



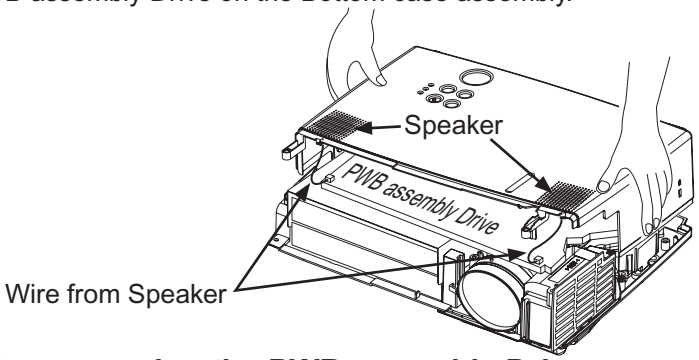


Can not control to RS-232C
Check at operating mode
Are the signals input at each pin of I306 on the PWB assembly Drive?
NO
YES
⑨ : RX
⑬ : TX
PWB assembly Drive
PWB assembly Signal

| Pin No | RS-232C |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 6 | SEL0 |
| 7 | RTS |
| 9 | |
| 10 | GND |
| 12 | |
| 13 | RDP |
| 14 | TDP |

# 6. Service points

## ● Cautions when removing the Upper case assembly

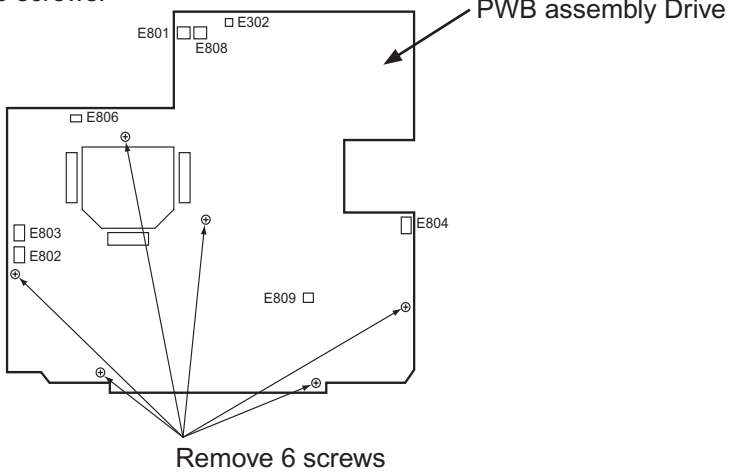
When you remove the Upper case assembly, avoid to damage wires between speakers on the Upper case assembly and PWB assembly Drive on the Bottom case assembly.



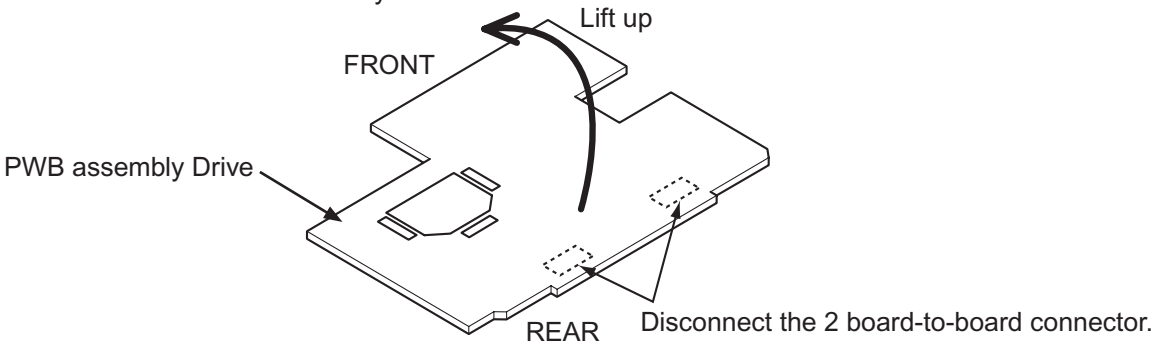

## ● Cautions when removing the PWB assembly Drive

When removing the PWB assembly Drive, there is danger of damaging the connector connecting cables and the PWB assembly Signal.

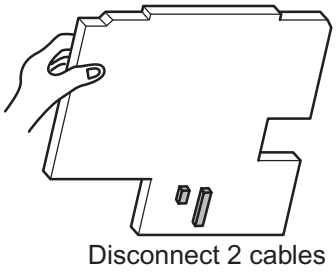
1) Disconnect 10 cables and remove 6 screws.




2) Lift up the rearward of the PWB assembly Drive to the front.

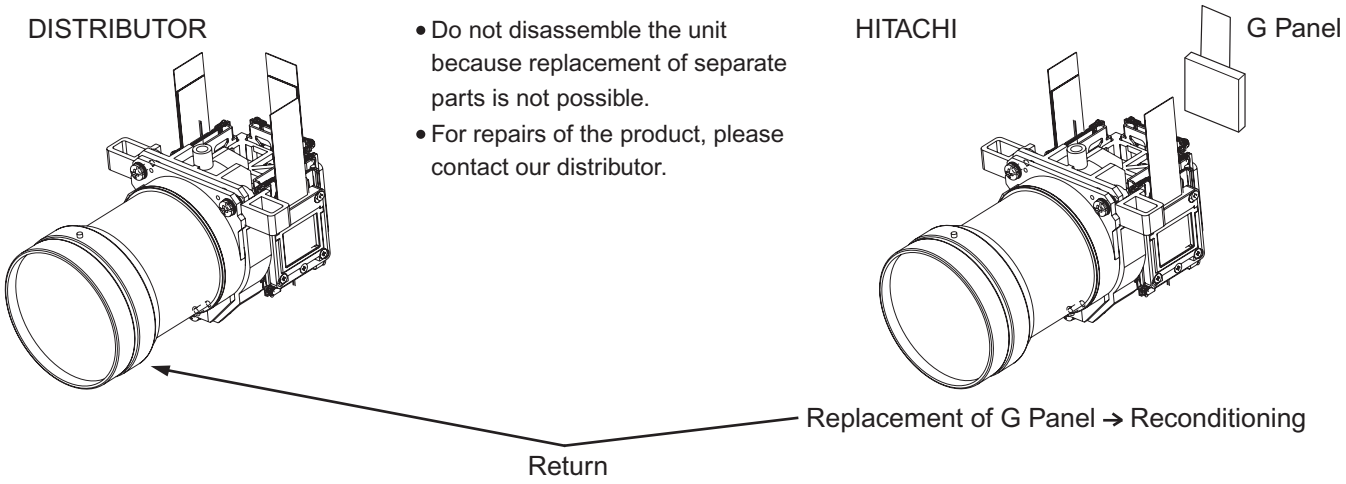



3) Disconnect 2 cables lifting the PWB assembly Drive.



## ● Before Replacing the LCD / Lens Prism

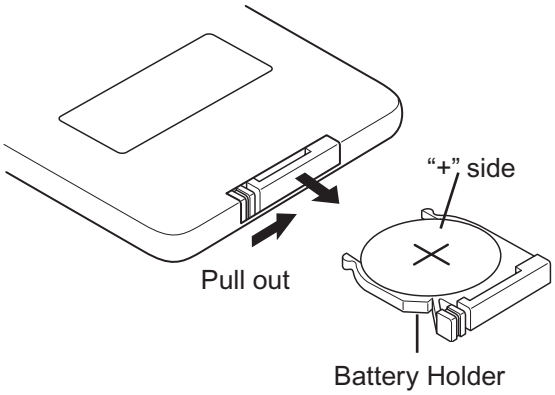
You should not replace separately the parts of the liquid crystal LCD / Lens Prism because it works properly only when used together. Therefore, regarding these parts, you can either replace part, LCD / Lens Prism assembly, or send the whole unit LCD / Lens Prism assembly back to HITACHI, where we will replace the malfunctioning part, recondition the device and send it back to you. In that case please contact our distributor.


DISTRIBUTOR
• Do not disassemble the unit because replacement of separate parts is not possible.
• For repairs of the product, please contact our distributor.
HITACHI
G Panel
Replacement of G Panel → Reconditioning
Return

## ● Loading the Battery

**First Loading:**

In original packing, the battery is installed in the battery holder of the remote control transmitter with protection film(the transparent filmsome of which is inside the battery folder). Pull out the protection film to load the battery.




**Replacing:**

1. See the reverse side of the remote control transmitter.
2. Pinch the groove and pull out battery holder as the drawing right.
3. Remove the worn battery.
4. Install the new battery with "+" side facing.
5. Push in and click the battery holder.

**CAUTION**

- Incorrect handling of the battery could result in fire or personal injury. The battery may explode if not handled properly. Be careful in handling the battery according to instructions of accompanying manual "SAFETY INSTRUCTIONS" and this manual.
- Use the 3V micro lithium battery type no.CR2025 only.
- When loading the battery, make sure the plus and minus terminals are correctly oriented as indicated in the remote control transmitter.
- When you dispose the battery, you must obey the law in the relative area or country.
- Keep the battery away from children and pets.
- When not to be used for an extended period, remove the battery from the remote control transmitter.

**NOTE:** Replace the batteries when remote control transmitter operation becomes difficult.

## ● Air Filter

**Cleaning the Air filter**

The air filter should be cleaned as described below at intervals of approximately 300 hours.

1. Switch the projector power supply OFF, and remove the power cord from the power outlet.
2. Clean the air filter with a vacuum cleaner.

**Replacing the Air filter**

Replace the air filter if contamination cannot be removed, or if it is damaged.

1. Remove the filter cover.
2. Remove the old filter.
3. Set the new filter and filter cover.

**CAUTION**

- Switch power OFF and remove the power cord from the power outlet before beginning maintenance work. Please read the separate “SAFETY INSTRUCTIONS” thoroughly to ensure that maintenance is performed correctly.
- Replace the air filter if contamination cannot be removed, or if it is damaged. Contact your dealer in such case.(Option Air filter assembly : MU01421)
- Do not use the equipment with the air filter removed.
- When the air filter is clogged with dust etc. the power supply is switched OFF automatically to prevent the temperature rising inside the projector.

## ● Lamp (Option Lamp: DT00431)

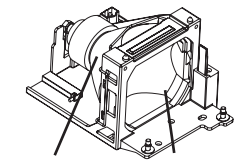
**HIGH VOLTAGE**
**HIGH TEMPERATURE**
**HIGH PRESSURE**

Contact your dealer before replacing the lamp.
Before replacing the lamp, switch power OFF, remove the power cord from the power outlet, and wait 45 minutes until the lamp has cooled. The lamp may explode if handled at high temperatures.

**WARNING**

- For disposal of used lamp, treat according to the instruction of community authorities.
- Since the lamp is made of glass, do not apply shock to it and do not scratch it.
- Also, do not use old lamp. This could also cause explosion of the lamp.
- Premature lamp failure MAY be caused by an electronic component in the projector and not necessarily the lamp. If unsure contact your local service center.
- If it is probable that the lamp has exploded (explosive sound is heard), disconnect the power plug from the power outlet and ask your dealer to replace lamp. The lamp is covered by front glass, but in rare cases, the reflector and the inside of the projector may be damaged by scattered broken pieces of glass, and broken pieces could cause injury when being handled.
- Do not use the projector with the lamp cover removed.

**Lamp**



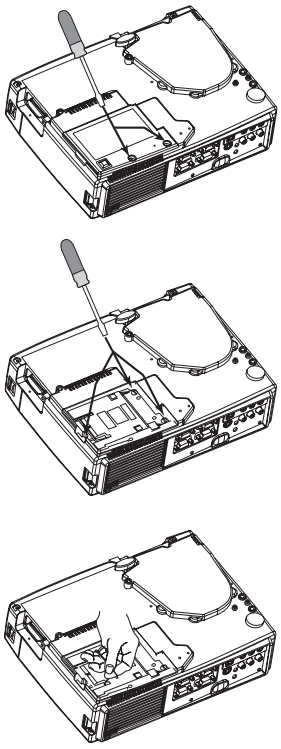

## Lamp Life

Projector lamps have a finite life. The image will become darker, and hues will become weaker, after a lamp has been used for a long period of time.
Replace the lamp if the LAMP indicator is red, or the CHANGE THE LAMP message appears when the projector is switched ON.

**NOTE:** The LAMP indicator is also red when the lamp unit reaches high temperature. Before replacing the lamp, switch power OFF, wait approximately 20 minutes, and switch power ON again.
If the LAMP indicator is still red, replace the lamp.

## Replacing the Lamp

1. Switch the projector OFF, remove the power cord from the power outlet, and wait at least 45 minutes for the unit to cool.
2. Prepare a new lamp.
3. Check that the projector has cooled sufficiently, and gently turn it upside down.
4. Loosen the two screws as shown in the diagram, and remove the lamp cover.
5. Loosen the three screws, and gently remove the lamp while holding the grips. Touching the inside of the lamp case may result in uneven coloring.
6. Install the new lamp and tighten the three screws firmly.
   Also steadily push the opposite side of the screwed lamp into the unit.
7. Replace the lamp cover in position and tighten the two screws firmly.
8. Gently turn the projector right-side up.



**CAUTION**

- Ensure that screws are tightened properly. Screws not tightened fully may result in injury or accidents.
- Do not use the projector with the lamp cover removed.

## Resetting the Lamp Timer

Reset the lamp timer after replacing the lamp. When the lamp has been replaced after the “THE POWER WILL TURN OFF AFTER 0 Hr” message is displayed, complete the following operation within ten minutes of switching power ON. The power will be turned off automatically in over 10 minutes.

1. Switch power ON, and press the RESET button, for approximately three seconds. The ‘LAMP xxxx hr’ message will appear on the lamp timer on the bottom of the screen.
2. Press the MENU button on the remote control transmitter, or the RESET button on the control panel, while the lamp timer is displayed. The ‘LAMP xxxx □ → 0 ■ CANCEL’ message will then appear.
3. Press the ◄ and select 0, and wait until the timer display is cleared.

**NOTE:** Do not reset the lamp timer without replacing the lamp. Reset the lamp timer always when replacing the lamp. The message functions will not operate properly if the lamp timer is not reset correctly.

## Message table

### On-screen display

The following messages are displayed on the screen.

| | |
|---|---|
| "CHANGE THE LAMP"<br>"AFTER REPLACING LAMP, RESET THE LAMP TIMER" | Lamp has 1,700 hours on it and may need to be changed. |
| "CHANGE THE LAMP"<br>"AFTER REPLACING LAMP, RESET THE LAMP TIMER"<br>"THE POWER WILL TURN OFF AFTER 20 Hr." | Lamp has 1,979 hours on it.<br>See "Reset the lamp timer" |
| Blinking of "CHANGE THE LAMP"<br>"AFTER REPLACING LAMP, RESET THE LAMP TIMER"<br>"THE POWER WILL TURN OFF AFTER 0 Hr." | When the lamp has 2,000 hours or more on it, the message will blink, and the power will turns off after 10 minutes. |
| "NO INPUT IS DETECTED" | Signal is not in. |
| "SYNC IS OUT OF RANGE" | The horizontal or vertical frequency of the input signal exceeds the range of the projector, it cannot be displayed. |
| "CHECK THE AIR FLOW" | Please remove the obstruction before the suction port. |

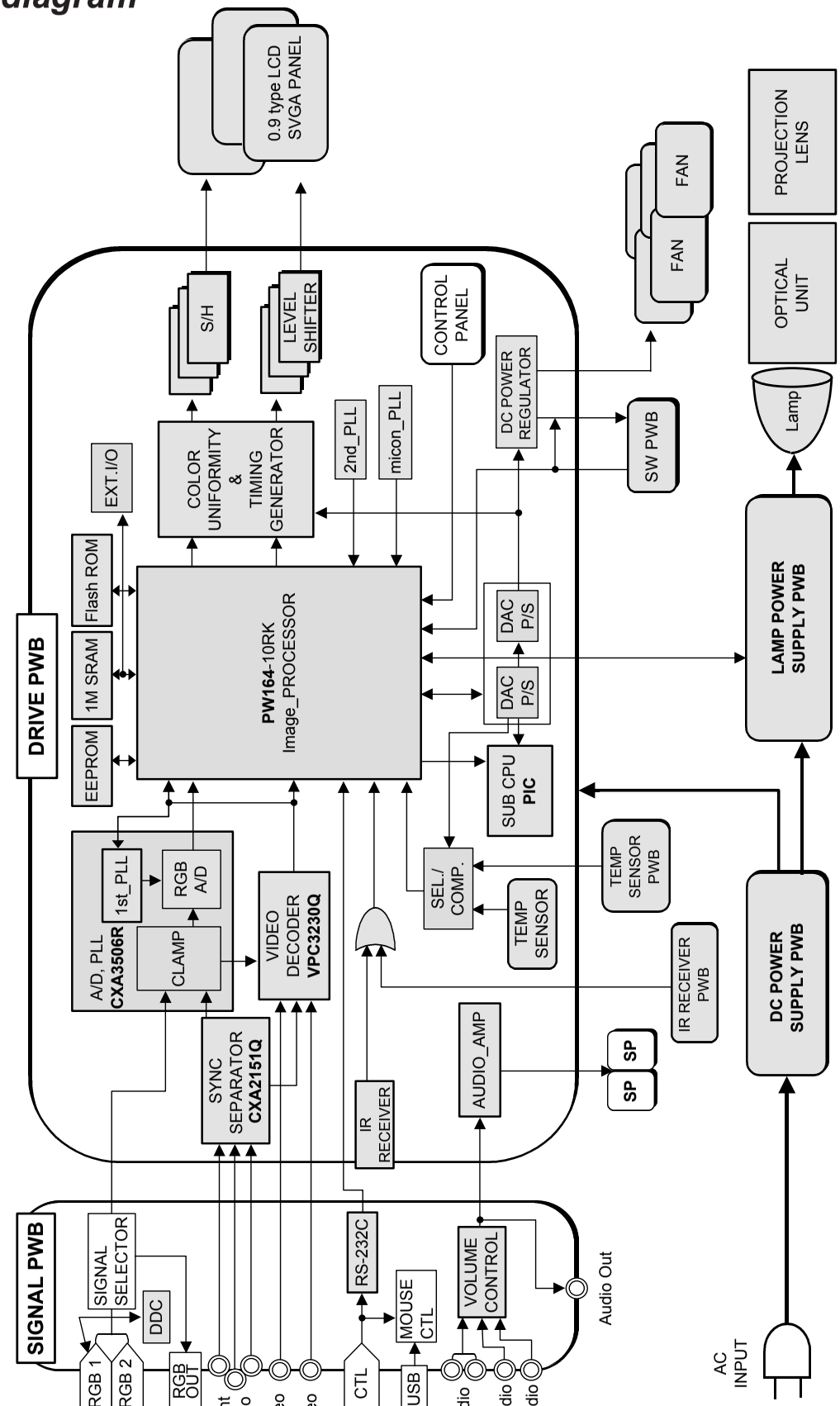
### Indicator display

The ON indicator, LAMP indicator and TEMP indicator will light or blink in the following cases.

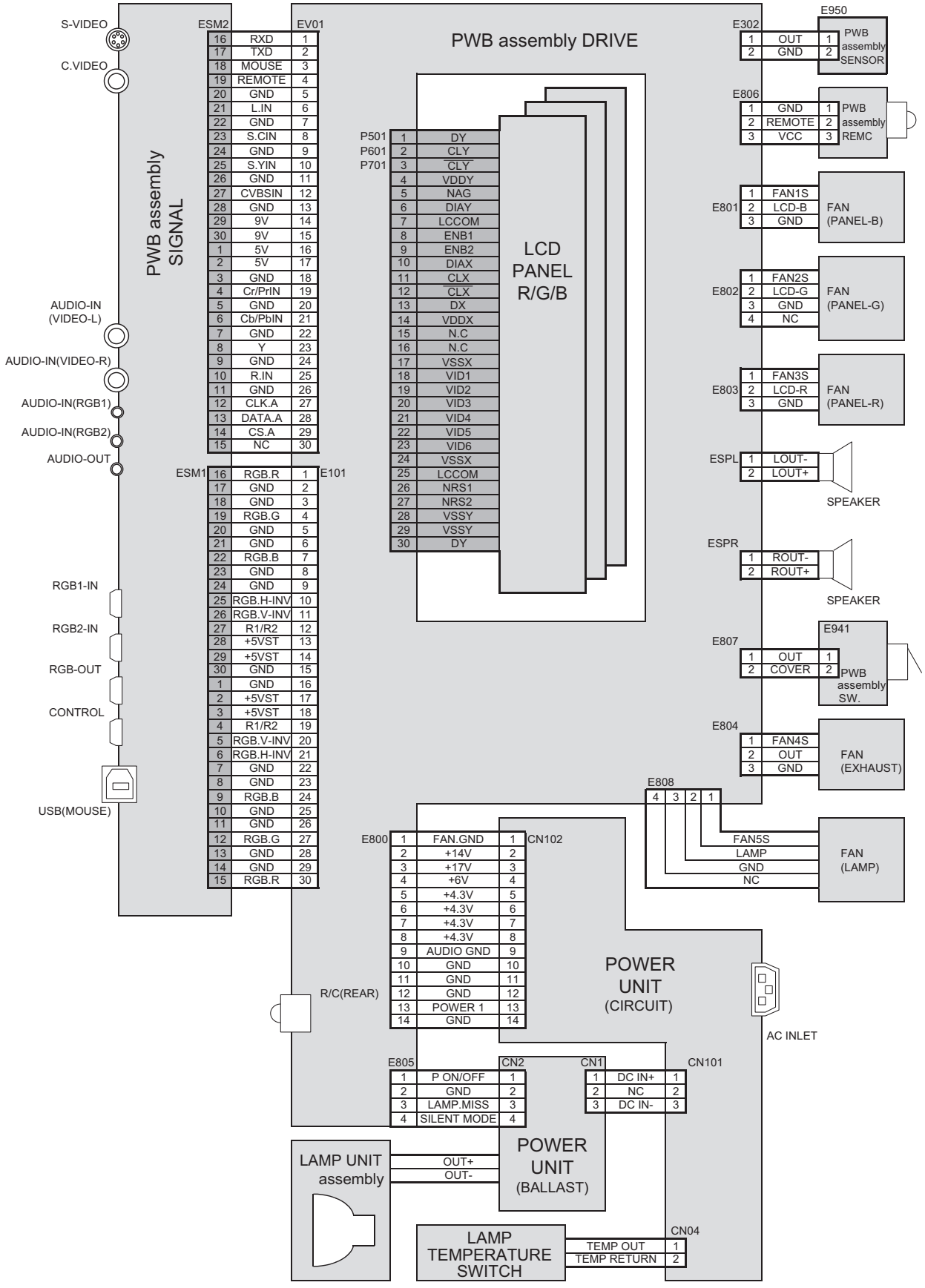
| ON indicator | LAMP indicator | TEMP indicator | Meaning | Remedy |
|---|---|---|---|---|
| Lights orange | Goes off | Goes off | Standby mode | ———— |
| Blinks green | Goes off | Goes off | During warming up | ———— |
| Lights green | Goes off | Goes off | During operation | ———— |
| Blinks orange | Goes off | Goes off | During cooling down | ———— |
| Lights red | Lights red | Goes off | Lamp cannot light | Cool projector by power off for 20 minutes.<br>If the indicator is still lit, lamp may be defective. Replace. |
| Lights red | Blinks red | Goes off | Lamp is not inserted or Lamp cover is open | Securely insert the lamp or shut the lamp door. |
| Lights red | Goes off | Blinks red | Cooling fan accidented or PWB assembly SENSOR accidented. | Replace fan, PWB assembly SENSOR or connect CNTH. |
| Lights red | Goes off | Lights red | Inside temperature becomes high | Please remove the obstruction before the suction port. |

When inside temperature becomes high, to protect the projector, the lamp may be turned off and the lamp indicator lights red, or the projector will be shut down and the all indicator display goes off.

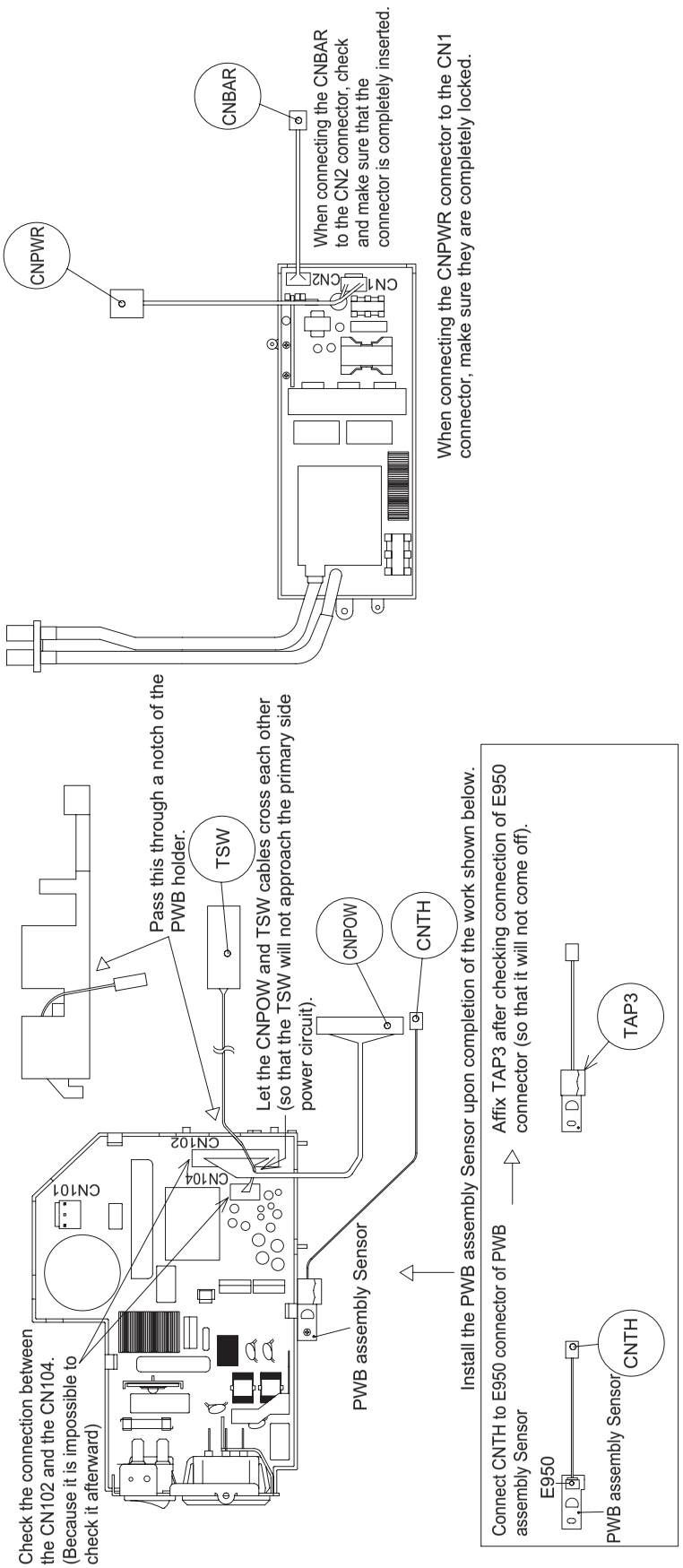
## 7. Block diagram



# 8. Connector connection diagram

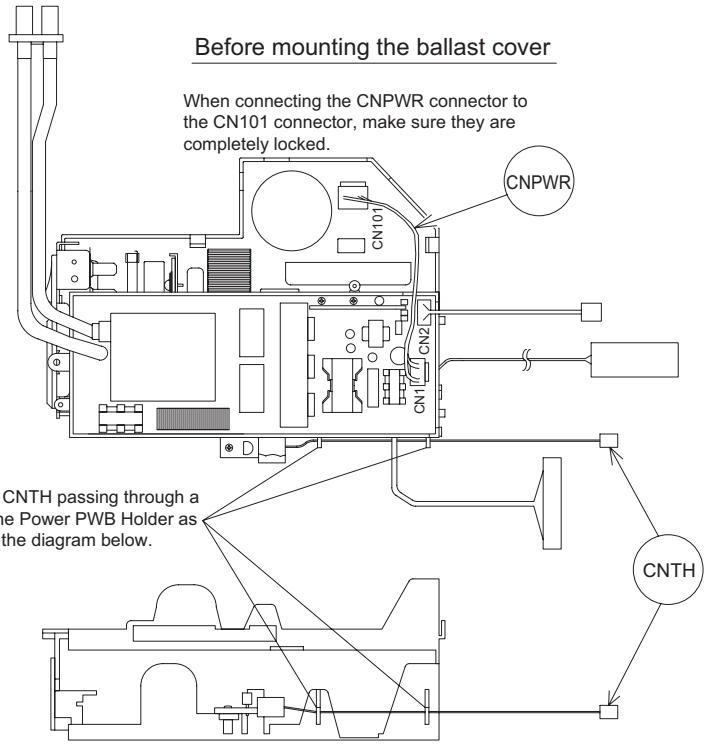


# 9. Wiring diagram


CNBAR
When connecting the CNBAR to the CN2 connector, check and make sure that the connector is completely inserted.
CNPWR
CN2
CN1
When connecting the CNPWR connector to the CN1 connector, make sure they are completely locked.
Pass this through a notch of the PWB holder.
TSW
Let the CNPOW and TSW cables cross each other (so that the TSW will not approach the primary side power circuit).
CNPOW
CNTH
CN102
CN104
CN101
Check the connection between the CN102 and the CN104. (Because it is impossible to check it afterward)
PWB assembly Sensor
Install the PWB assembly Sensor upon completion of the work shown below.
Connect CNTH to E950 connector of PWB assembly Sensor
E950
PWB assembly Sensor
CNTH
Affix TAP3 after checking connection of E950 connector (so that it will not come off).
TAP3

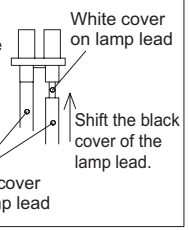
## Before mounting the ballast cover

When connecting the CNPWR connector to the CN101 connector, make sure they are completely locked.

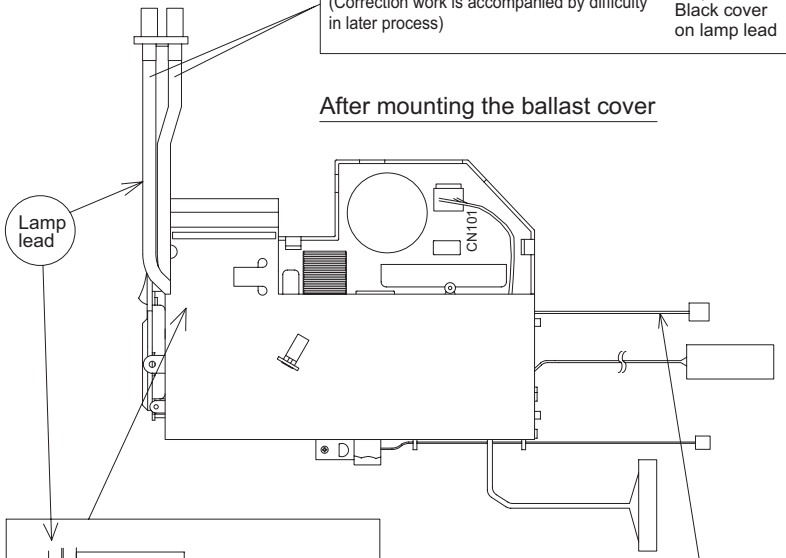


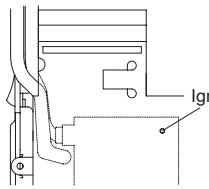

Keep the CNTH passing through a hook of the Power PWB Holder as shown in the diagram below.

Check that the black cover of a lamp lead is securely inserted into the connector.
If even a trivial portion of the white cover is visible inside in a state where the black cover is not inserted into the connector as shown in the diagram on the right, shift the black cover appropriately and insert it into the connector.
(Ascertain double coating to ensure safety standard)
(Correction work is accompanied by difficulty in later process)

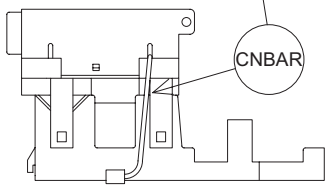



## After mounting the ballast cover

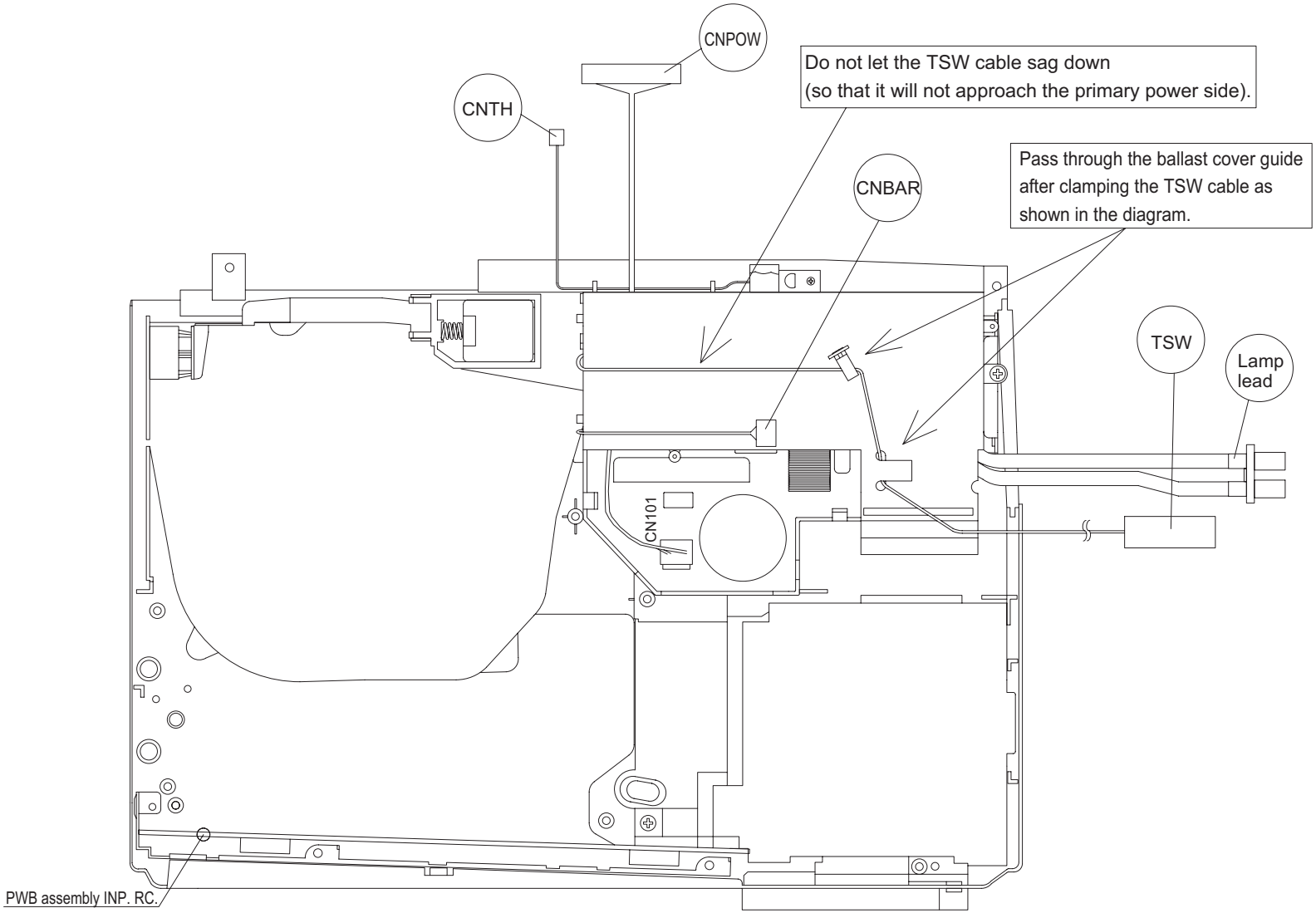


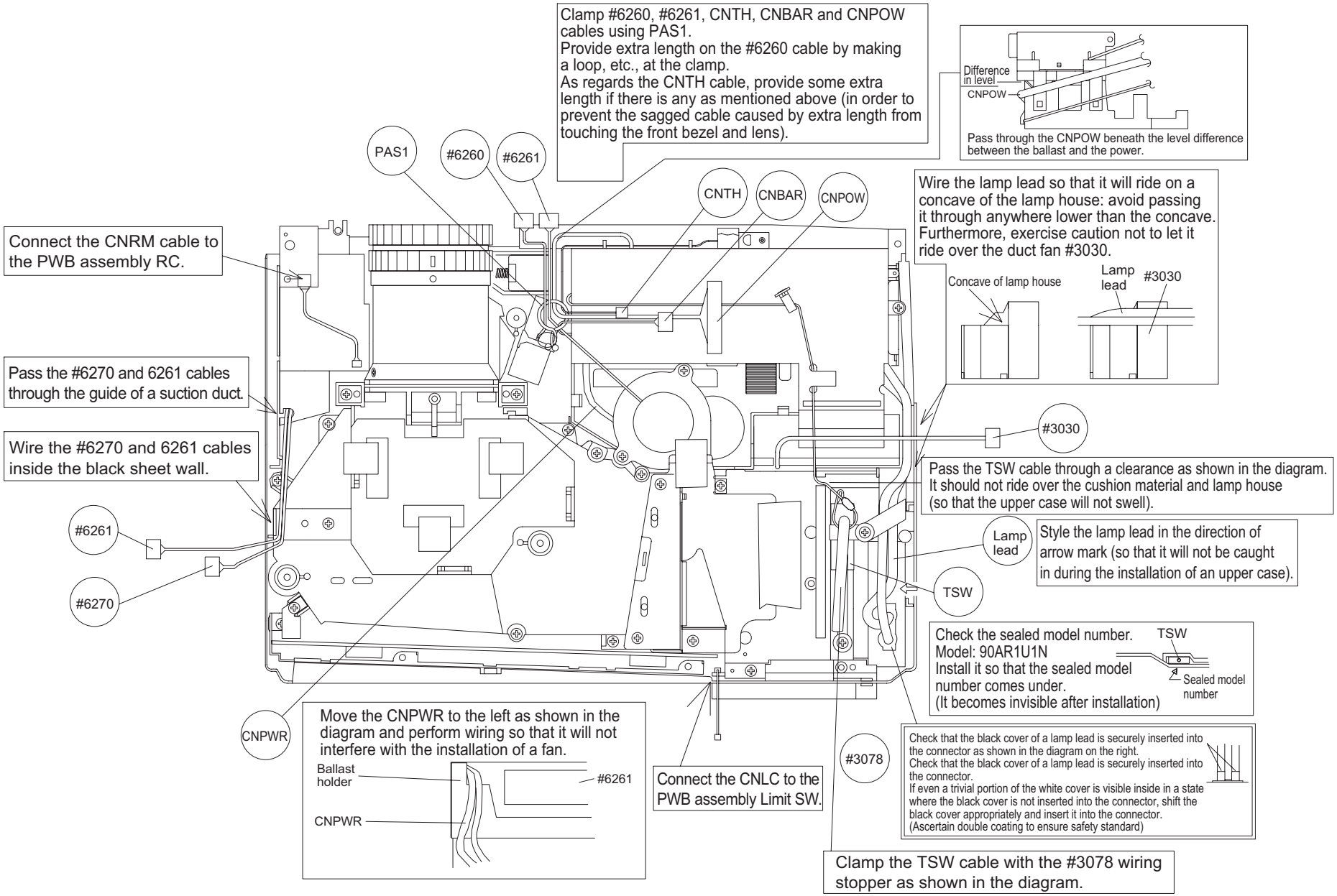

Style the lamp lead as shown in the diagram. At the time, be careful not to let the lead ride on the igniter box. (Because if it rides on the box, it becomes impossible to install the ballast cover)



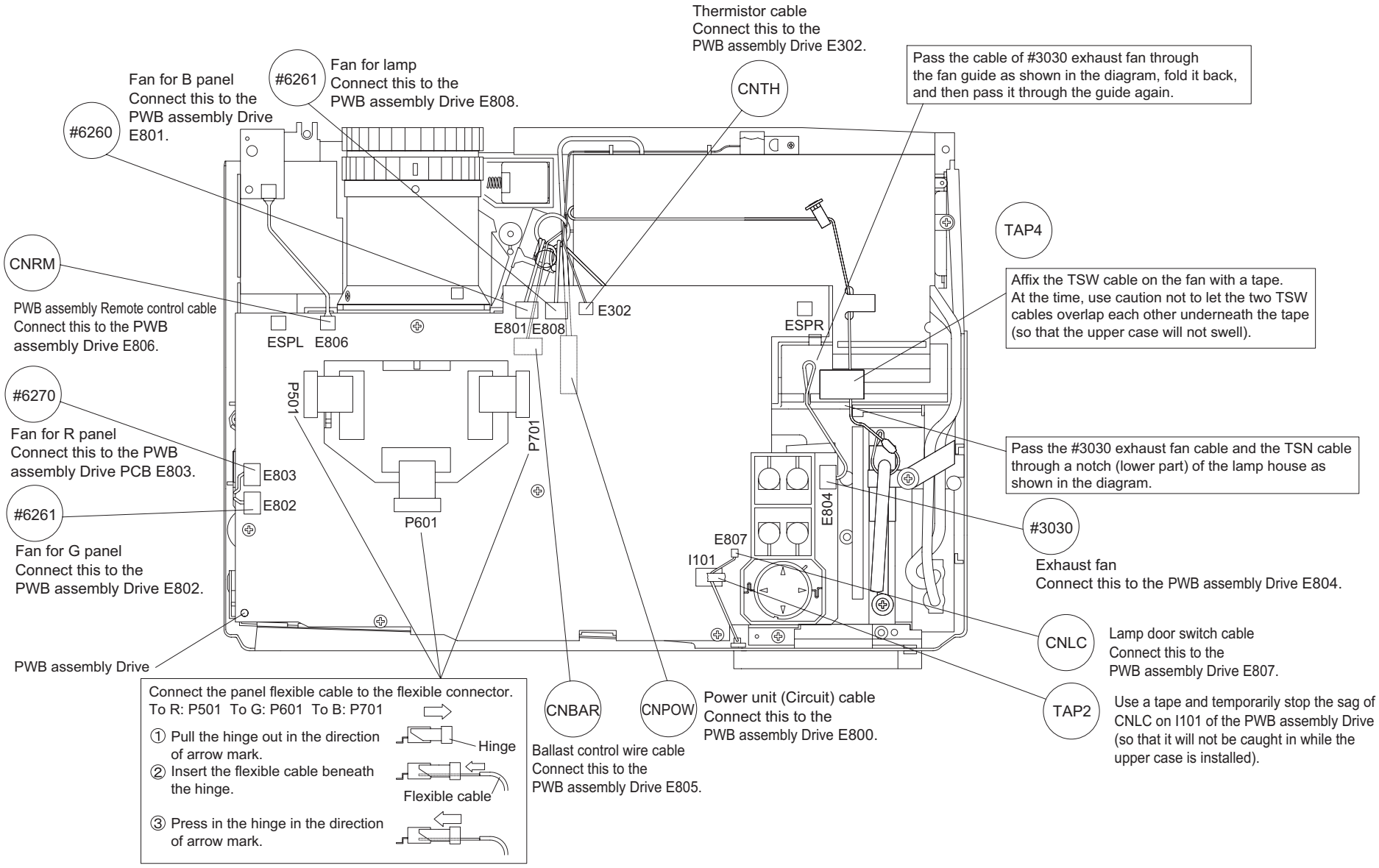

Make sure - as shown in the diagram - that the CNBAR is passed through a notch on the ballast cover.

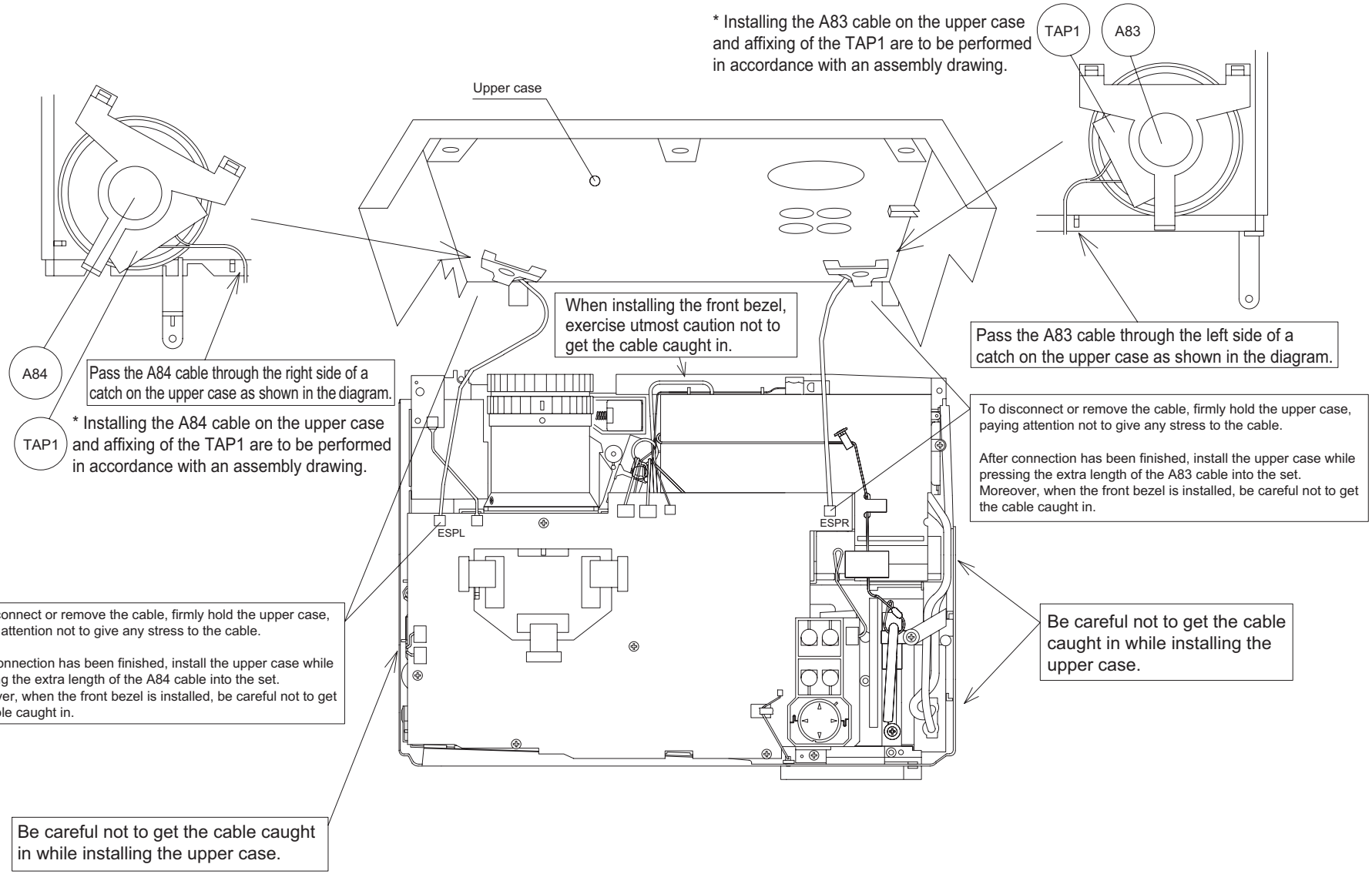



Keep individual cables away from positions to mount optical units as shown in the diagram so that the cables will not be caught in when optical units are mounted.


Clamp #6260, #6261, CNTH, CNBAR and CNPOW cables using PAS1.
Provide extra length on the #6260 cable by making a loop, etc., at the clamp.
As regards the CNTH cable, provide some extra length if there is any as mentioned above (in order to prevent the sagged cable caused by extra length from touching the front bezel and lens).
Difference in level
CNPOW
Pass through the CNPOW beneath the level difference between the ballast and the power.
PAS1
#6260
#6261
CNTH
CNBAR
CNPOW
Wire the lamp lead so that it will ride on a concave of the lamp house: avoid passing it through anywhere lower than the concave. Furthermore, exercise caution not to let it ride over the duct fan #3030.
Concave of lamp house
Lamp lead
#3030
Connect the CNRM cable to the PWB assembly RC.
Pass the #6270 and 6261 cables through the guide of a suction duct.
Wire the #6270 and 6261 cables inside the black sheet wall.
#6261
#6270
#3030
Pass the TSW cable through a clearance as shown in the diagram. It should not ride over the cushion material and lamp house (so that the upper case will not swell).
Lamp lead
Style the lamp lead in the direction of arrow mark (so that it will not be caught in during the installation of an upper case).
TSW
Check the sealed model number.
Model: 90AR1U1N
Install it so that the sealed model number comes under.
(It becomes invisible after installation)
TSW
Sealed model number
CNPWR
Move the CNPWR to the left as shown in the diagram and perform wiring so that it will not interfere with the installation of a fan.
Ballast holder
#6261
CNPWR
Connect the CNLC to the PWB assembly Limit SW.
#3078
Check that the black cover of a lamp lead is securely inserted into the connector as shown in the diagram on the right.
Check that the black cover of a lamp lead is securely inserted into the connector.
If even a trivial portion of the white cover is visible inside in a state where the black cover is not inserted into the connector, shift the black cover appropriately and insert it into the connector.
(Ascertain double coating to ensure safety standard)
Clamp the TSW cable with the #3078 wiring stopper as shown in the diagram.

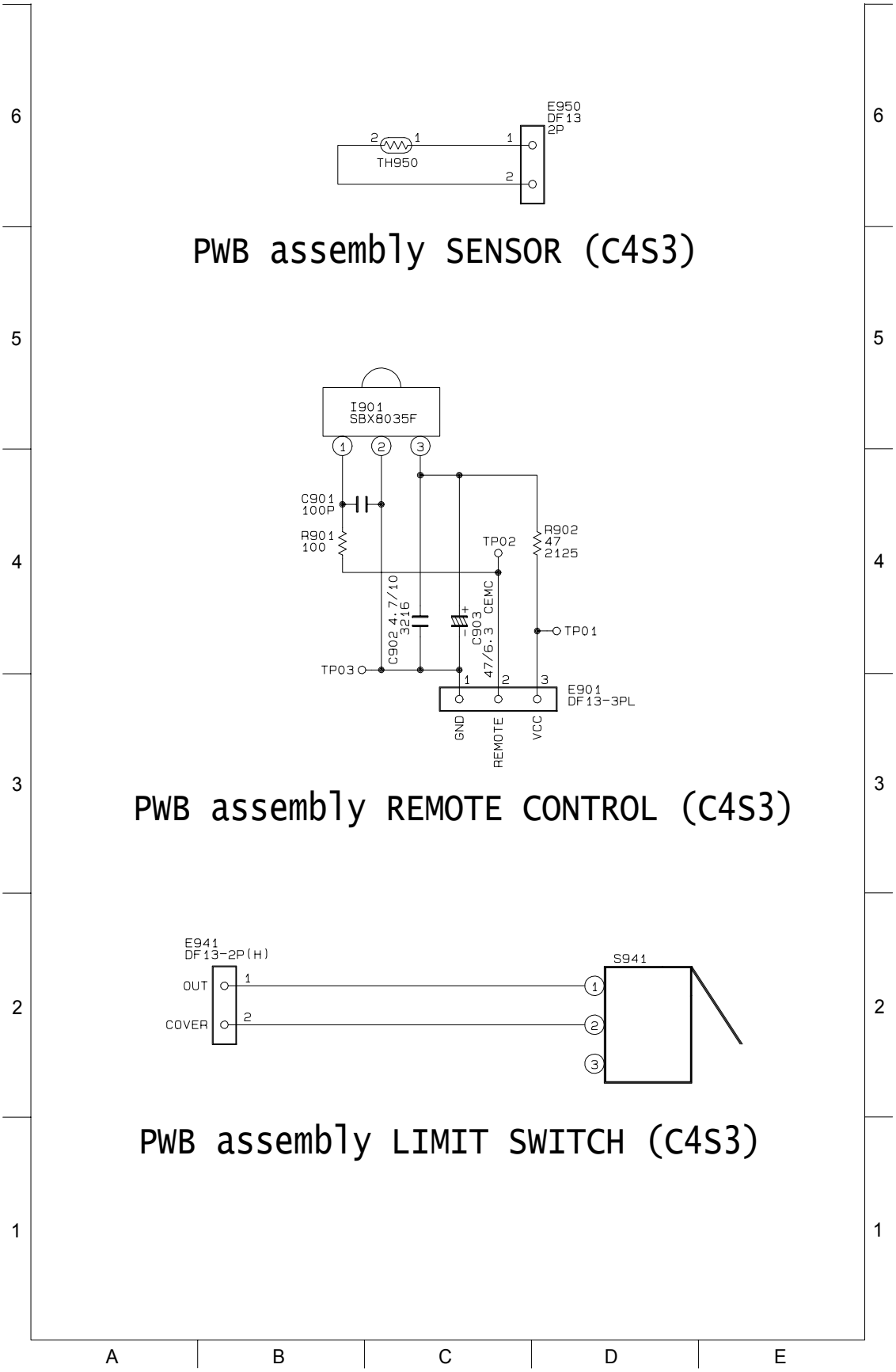
Procedures
Before mounting the PWB assembly Drive, connect the CNBAR and the CNPOW to a connector on the back of the PWB in a state where you hold the PWB assembly Drive with your hands.
Connect the other cables in a state where the PWB assembly Drive is mounted.

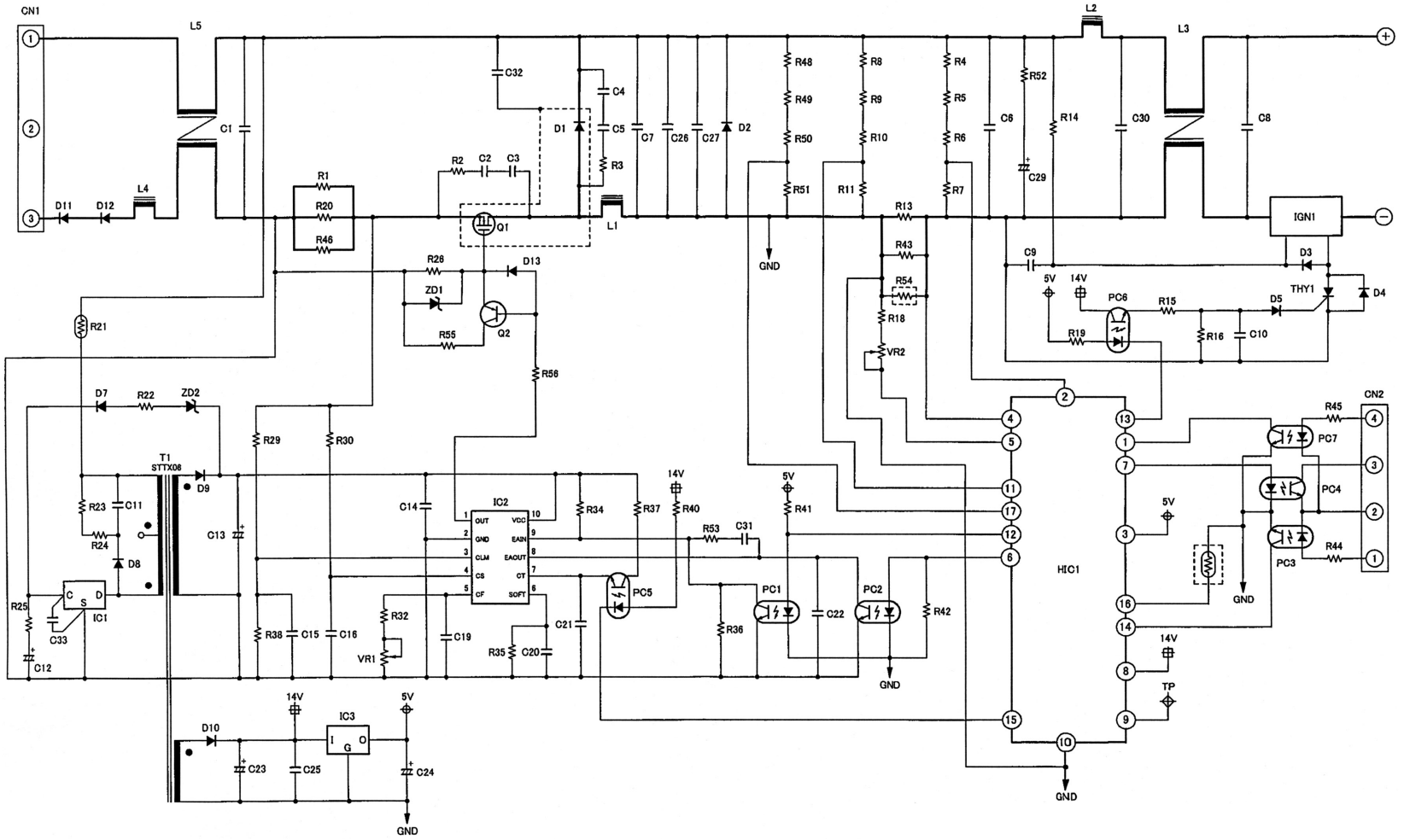

Thermistor cable
Connect this to the
PWB assembly Drive E302.
CNTH
Pass the cable of #3030 exhaust fan through the fan guide as shown in the diagram, fold it back, and then pass it through the guide again.
#6261
Fan for lamp
Connect this to the
PWB assembly Drive E808.
Fan for B panel
Connect this to the
PWB assembly Drive
E801.
#6260
TAP4
CNRM
PWB assembly Remote control cable
Connect this to the PWB
assembly Drive E806.
Affix the TSW cable on the fan with a tape.
At the time, use caution not to let the two TSW cables overlap each other underneath the tape (so that the upper case will not swell).
E302
E801
E808
ESPR
ESPL
E806
P501
P701
#6270
Fan for R panel
Connect this to the PWB
assembly Drive PCB E803.
E803
E802
P601
Pass the #3030 exhaust fan cable and the TSN cable through a notch (lower part) of the lamp house as shown in the diagram.
E804
#6261
Fan for G panel
Connect this to the
PWB assembly Drive E802.
E807
I101
#3030
Exhaust fan
Connect this to the PWB assembly Drive E804.
PWB assembly Drive
CNLC
Lamp door switch cable
Connect this to the
PWB assembly Drive E807.
TAP2
Use a tape and temporarily stop the sag of CNLC on I101 of the PWB assembly Drive (so that it will not be caught in while the upper case is installed).
CNBAR
CNPOW
Power unit (Circuit) cable
Connect this to the
PWB assembly Drive E800.
Ballast control wire cable
Connect this to the
PWB assembly Drive E805.
Connect the panel flexible cable to the flexible connector.
To R: P501 To G: P601 To B: P701
① Pull the hinge out in the direction of arrow mark.
② Insert the flexible cable beneath the hinge.
③ Press in the hinge in the direction of arrow mark.
Hinge
Flexible cable


* Installing the A83 cable on the upper case and affixing of the TAP1 are to be performed in accordance with an assembly drawing.
TAP1
A83
Upper case
When installing the front bezel, exercise utmost caution not to get the cable caught in.
Pass the A83 cable through the left side of a catch on the upper case as shown in the diagram.
A84
Pass the A84 cable through the right side of a catch on the upper case as shown in the diagram.
TAP1
* Installing the A84 cable on the upper case and affixing of the TAP1 are to be performed in accordance with an assembly drawing.
To disconnect or remove the cable, firmly hold the upper case, paying attention not to give any stress to the cable.
After connection has been finished, install the upper case while pressing the extra length of the A83 cable into the set.
Moreover, when the front bezel is installed, be careful not to get the cable caught in.
ESPL
ESPR
To disconnect or remove the cable, firmly hold the upper case, paying attention not to give any stress to the cable.
After connection has been finished, install the upper case while pressing the extra length of the A84 cable into the set.
Moreover, when the front bezel is installed, be careful not to get the cable caught in.
Be careful not to get the cable caught in while installing the upper case.
Be careful not to get the cable caught in while installing the upper case.

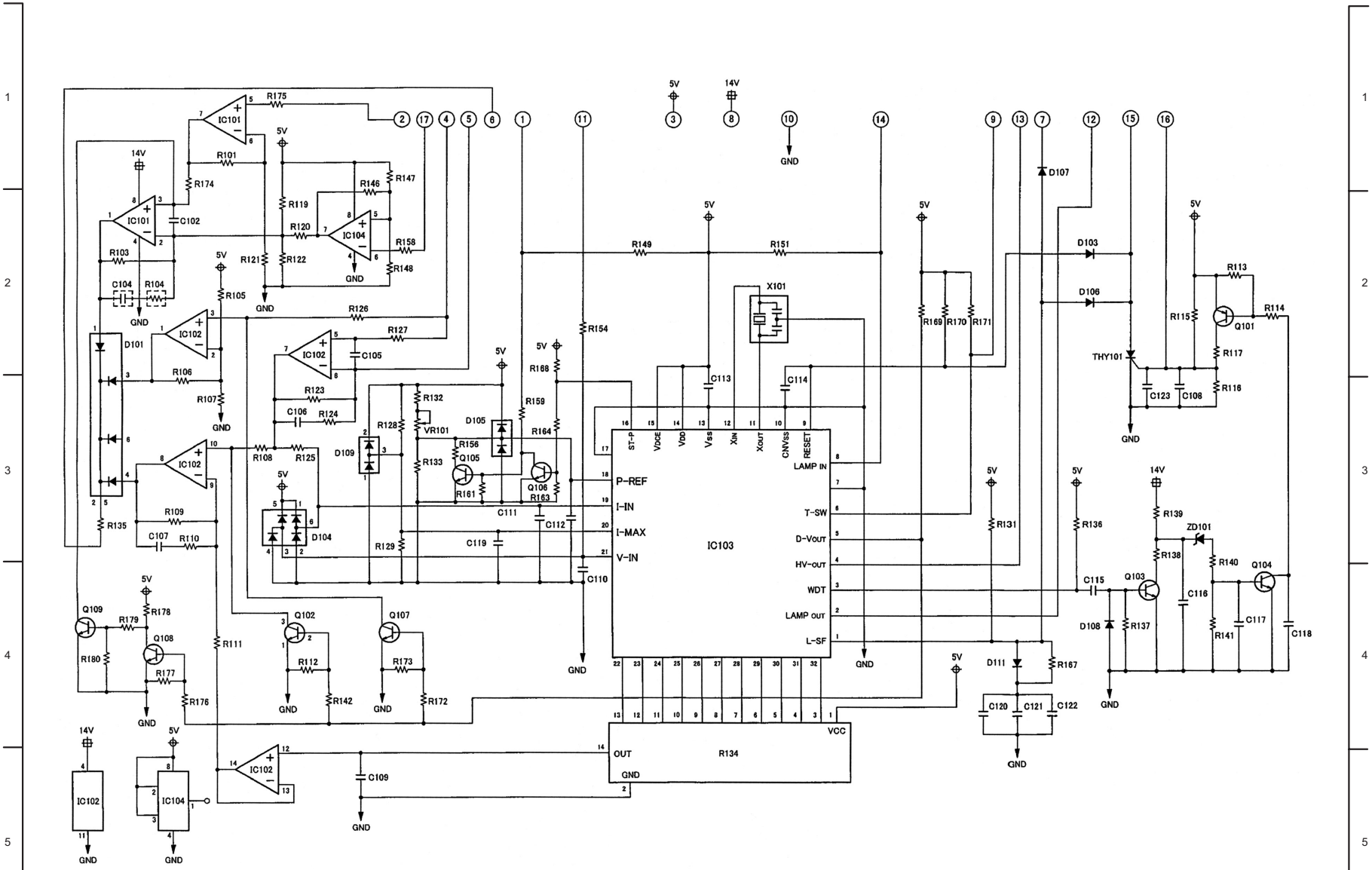
## *10. Basic circuit diagram*

Parts with hatching are not mounted.

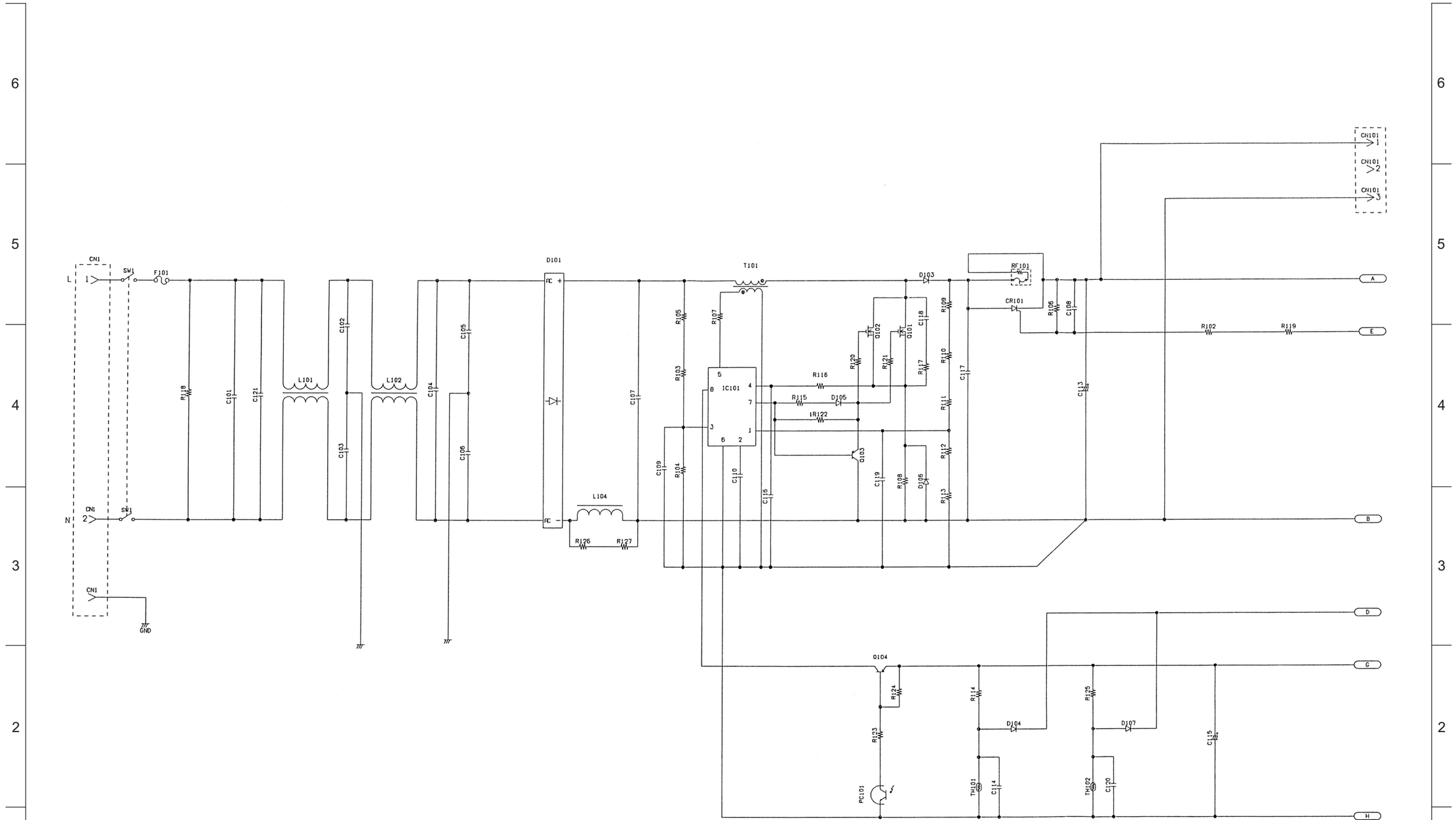




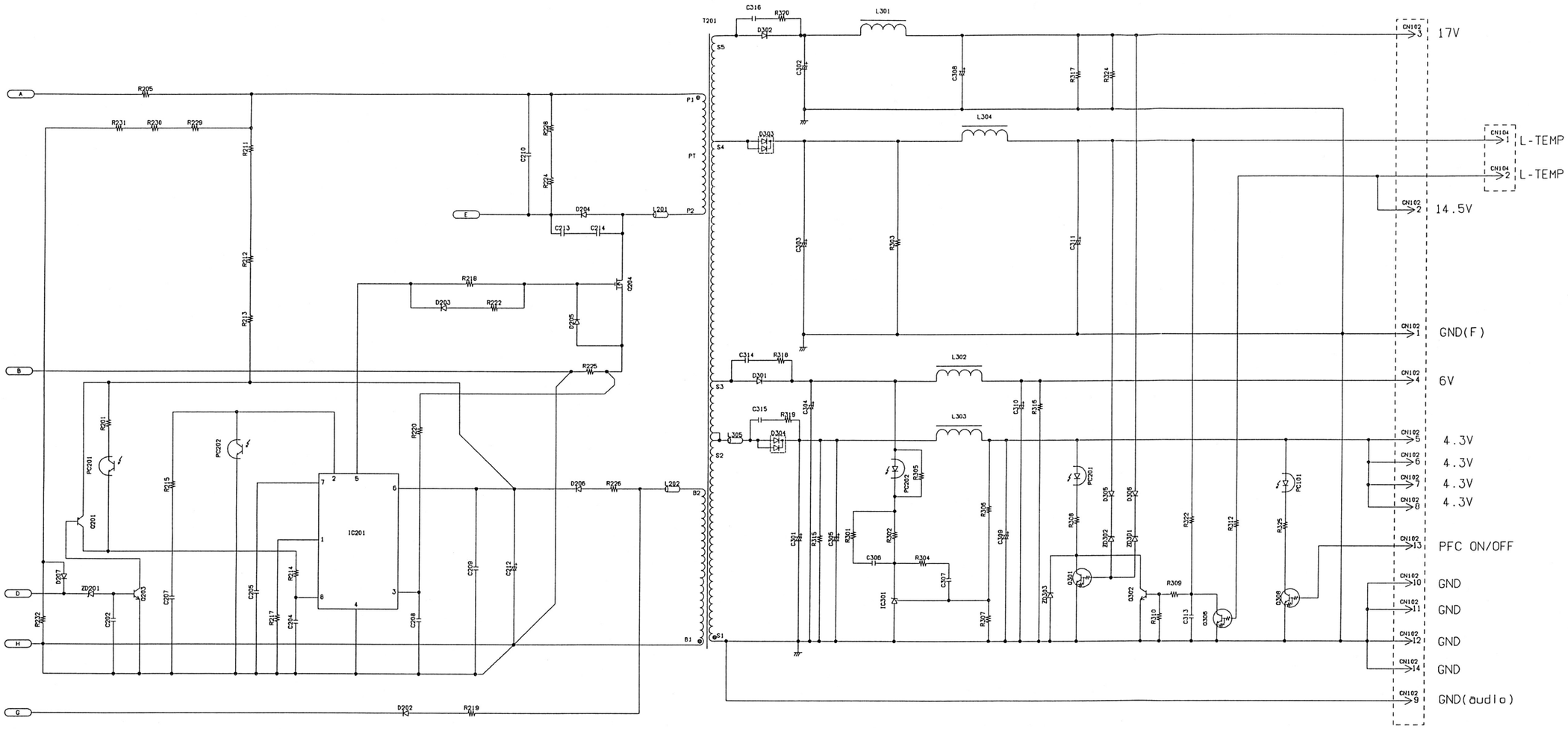

# POWER UNIT (BALLAST) 1 (C4S3)



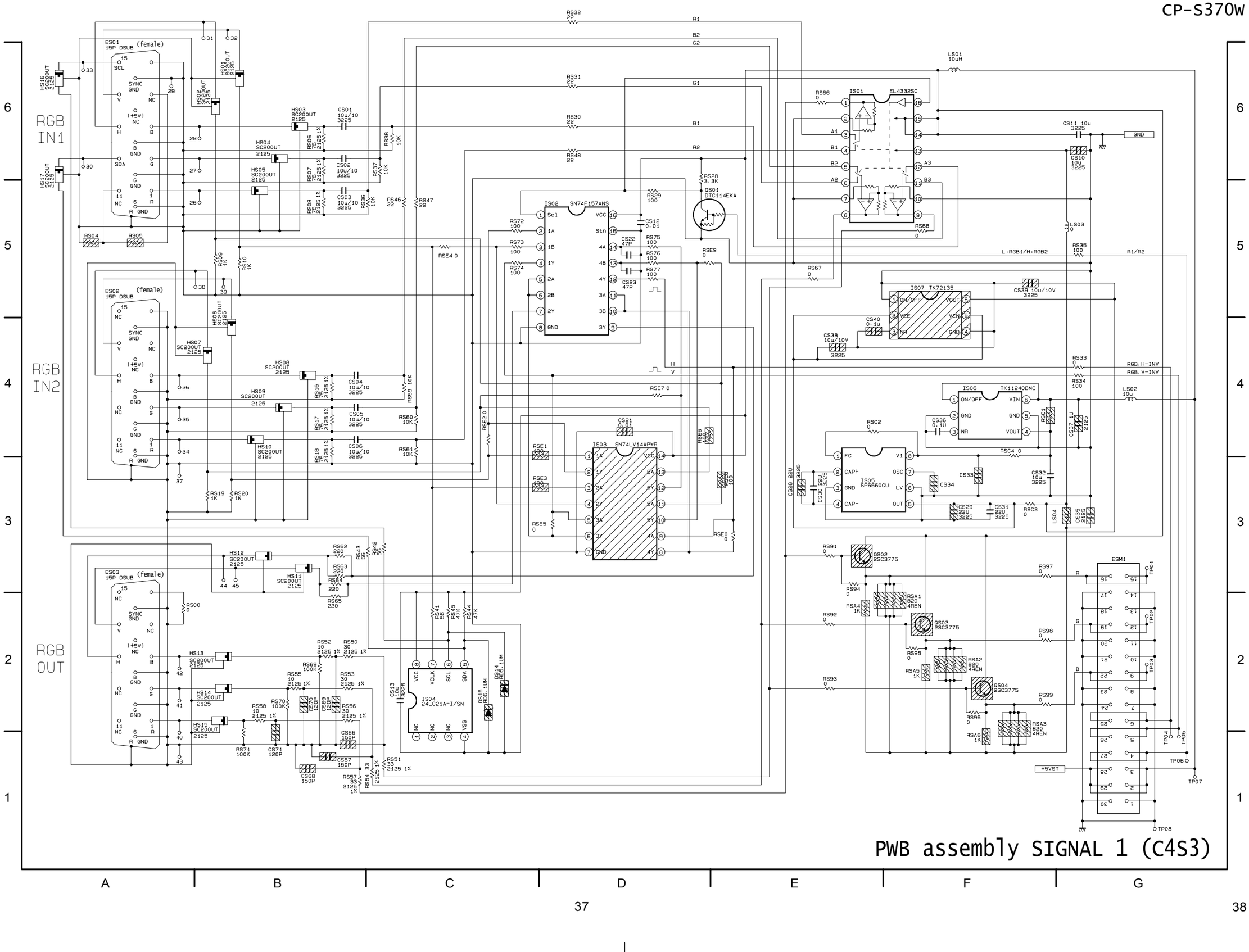

POWER UNIT (BALLAST) 2 (C4S3)



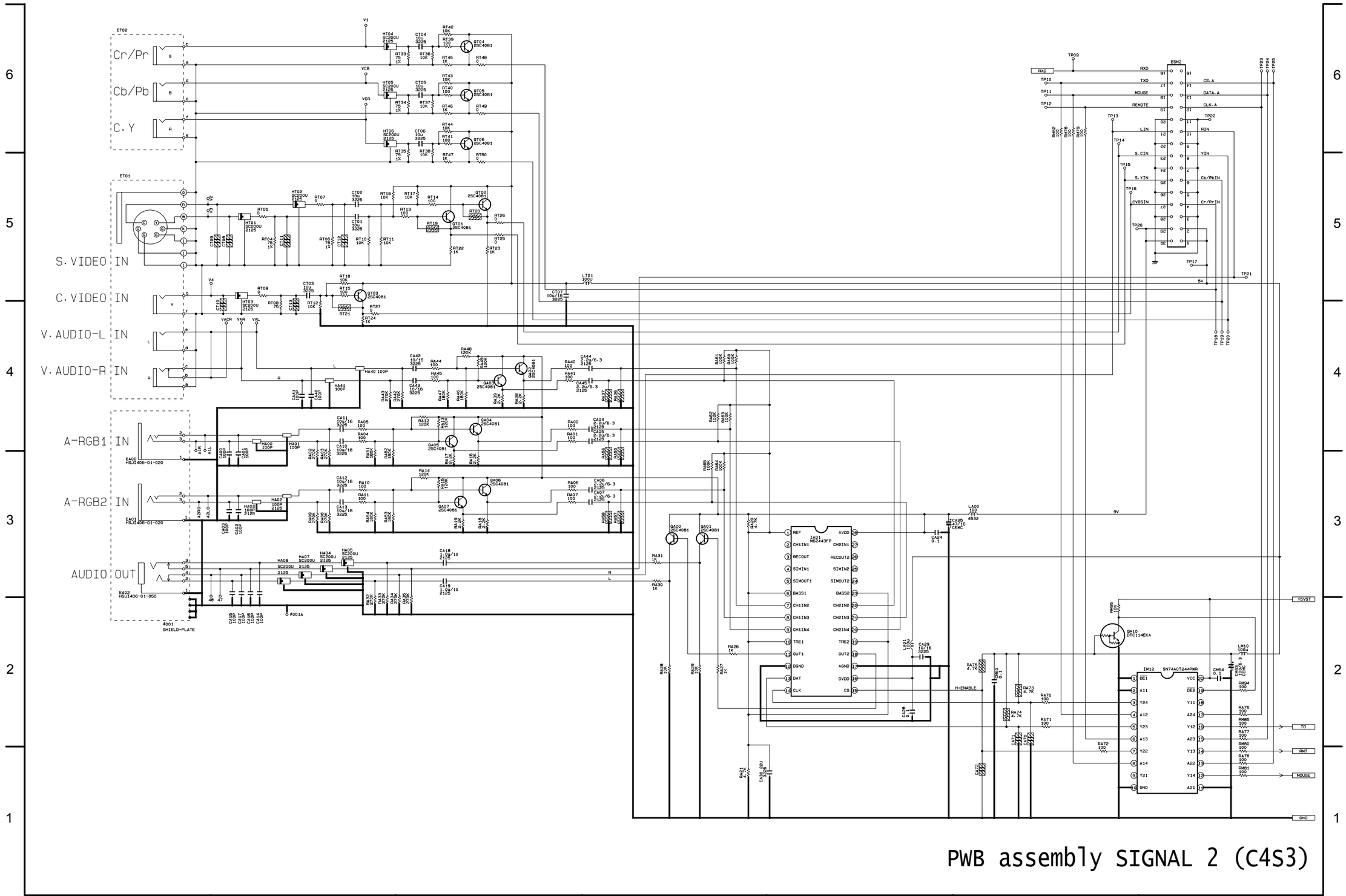

# POWER UNIT (CIRCUIT) 1 (C4S3)



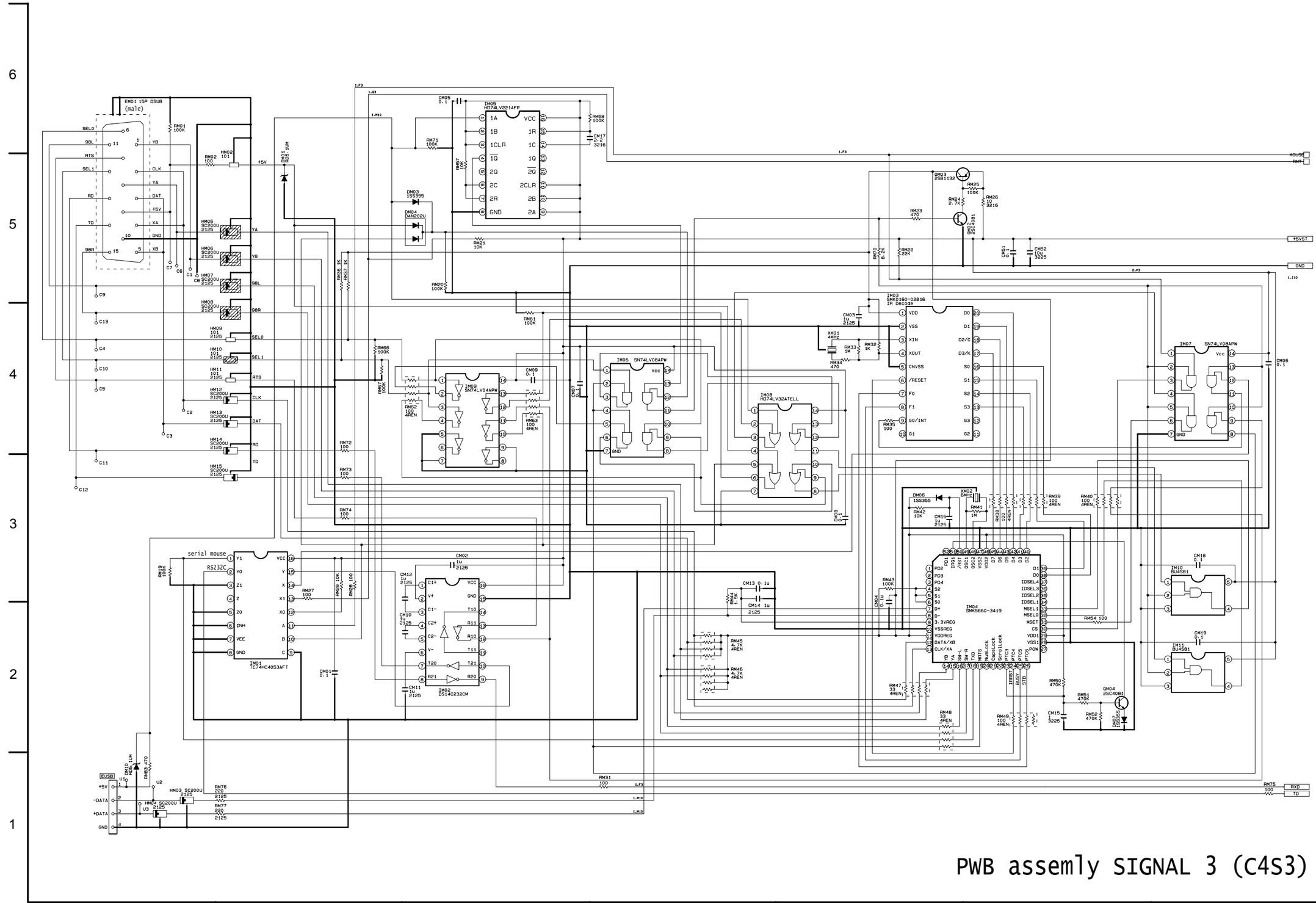

# POWER UNIT (CIRCUIT) 2 (C4S3)




PWB assembly SIGNAL 1 (C4S3)

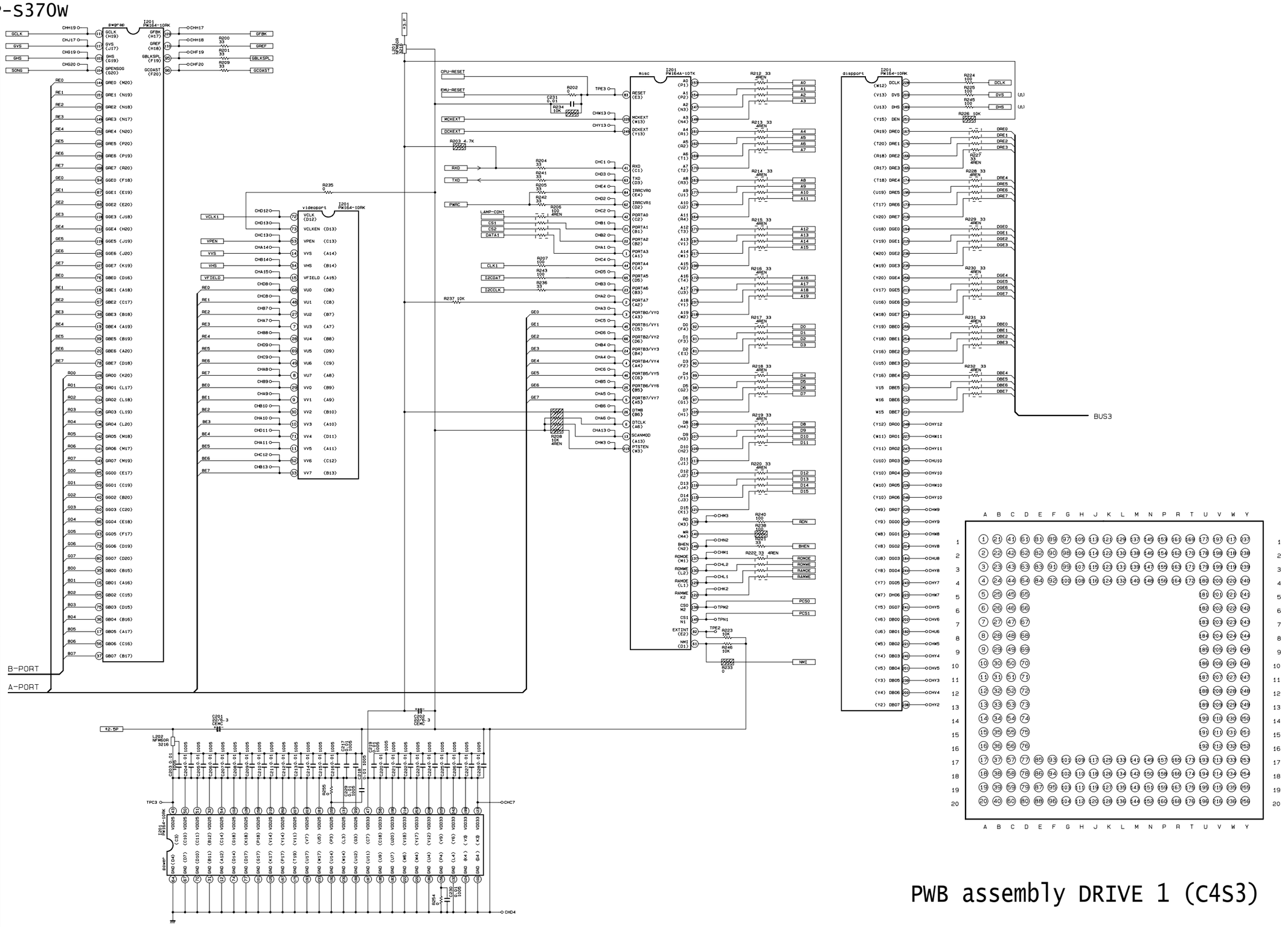



PWB assembly SIGNAL 2 (C4S3)




PWB assemly SIGNAL 3 (C4S3)

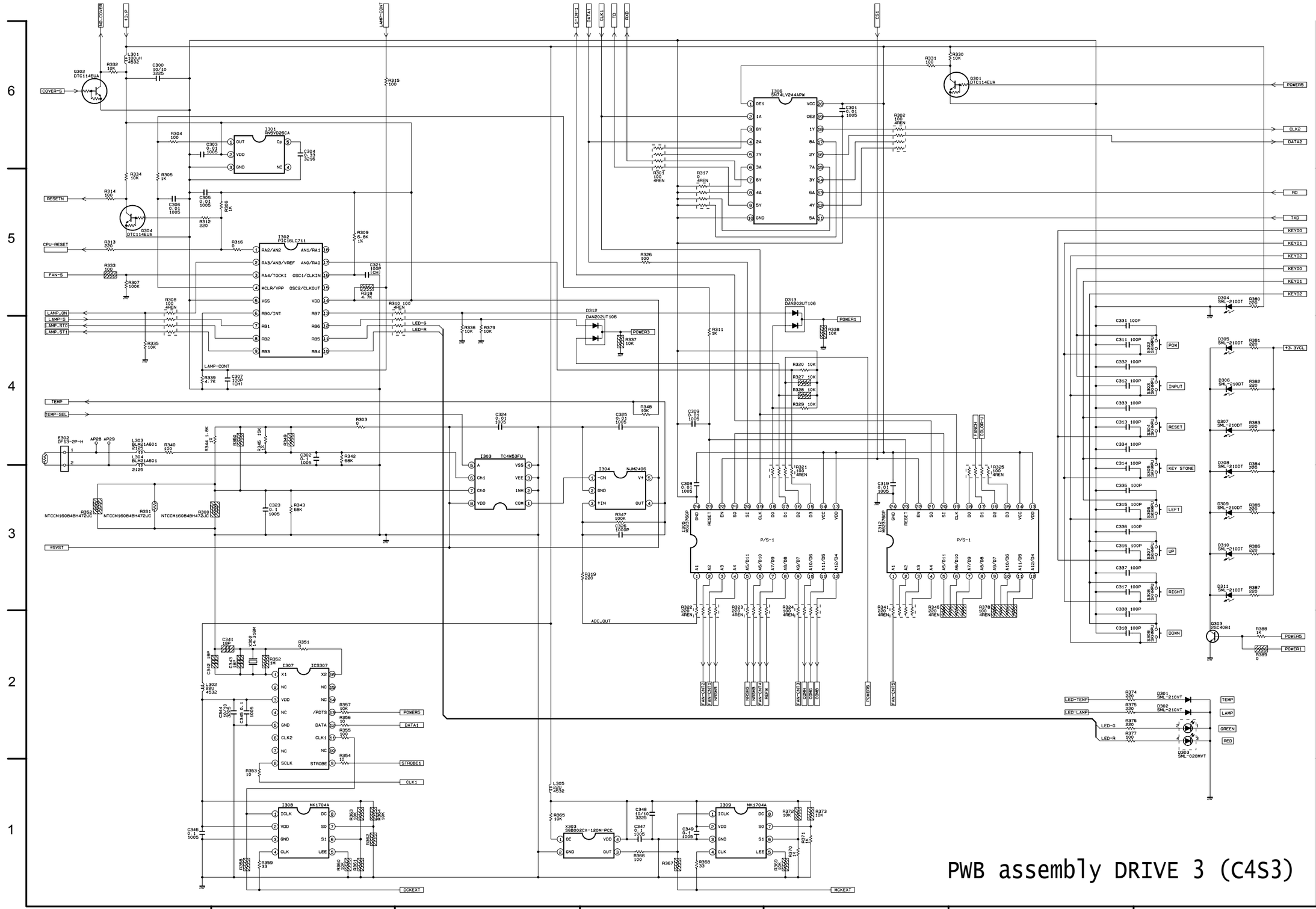
# CP-S370W




PWB assembly DRIVE 1 (C4S3)

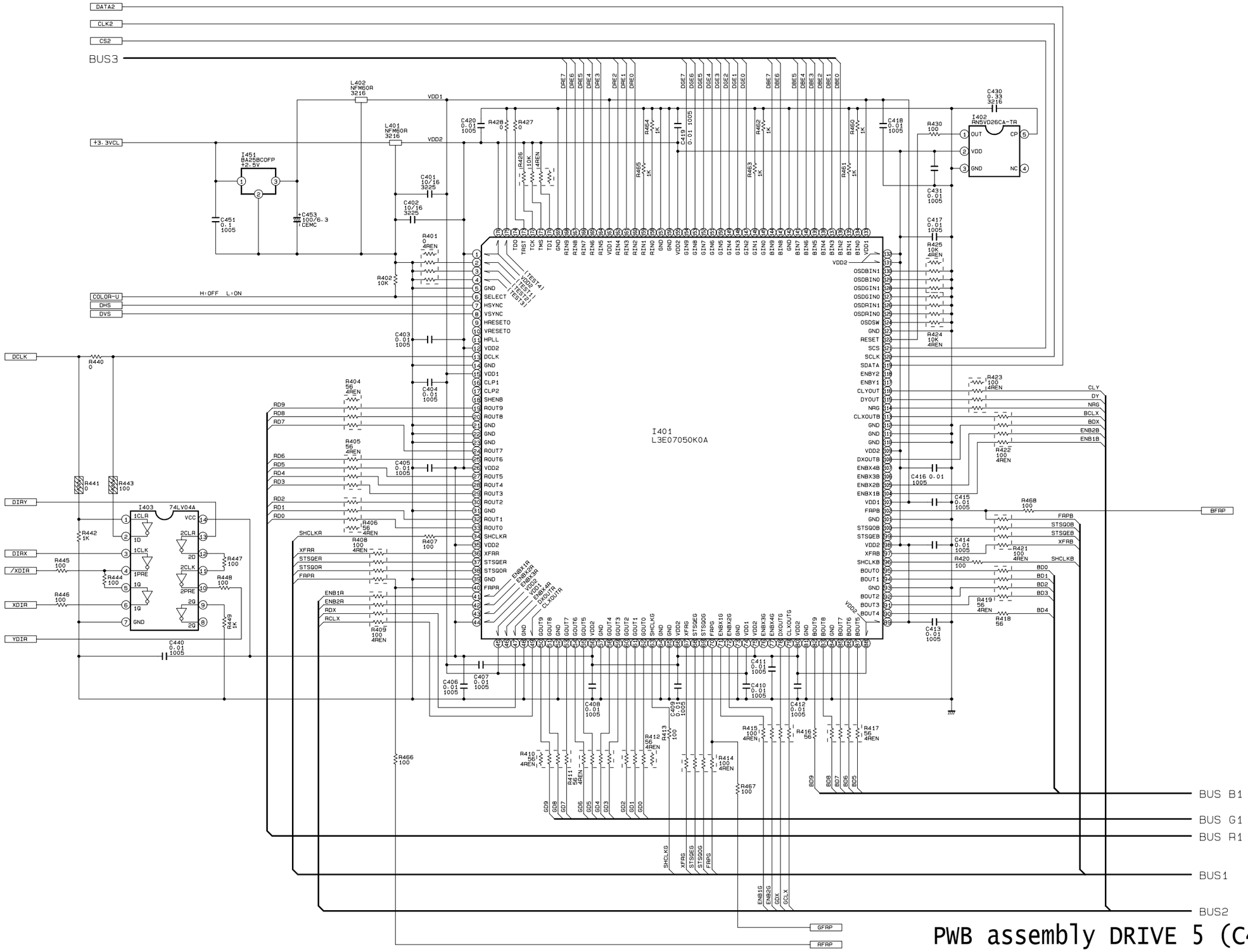
# PWB assembly DRIVE 2 (C4S3)

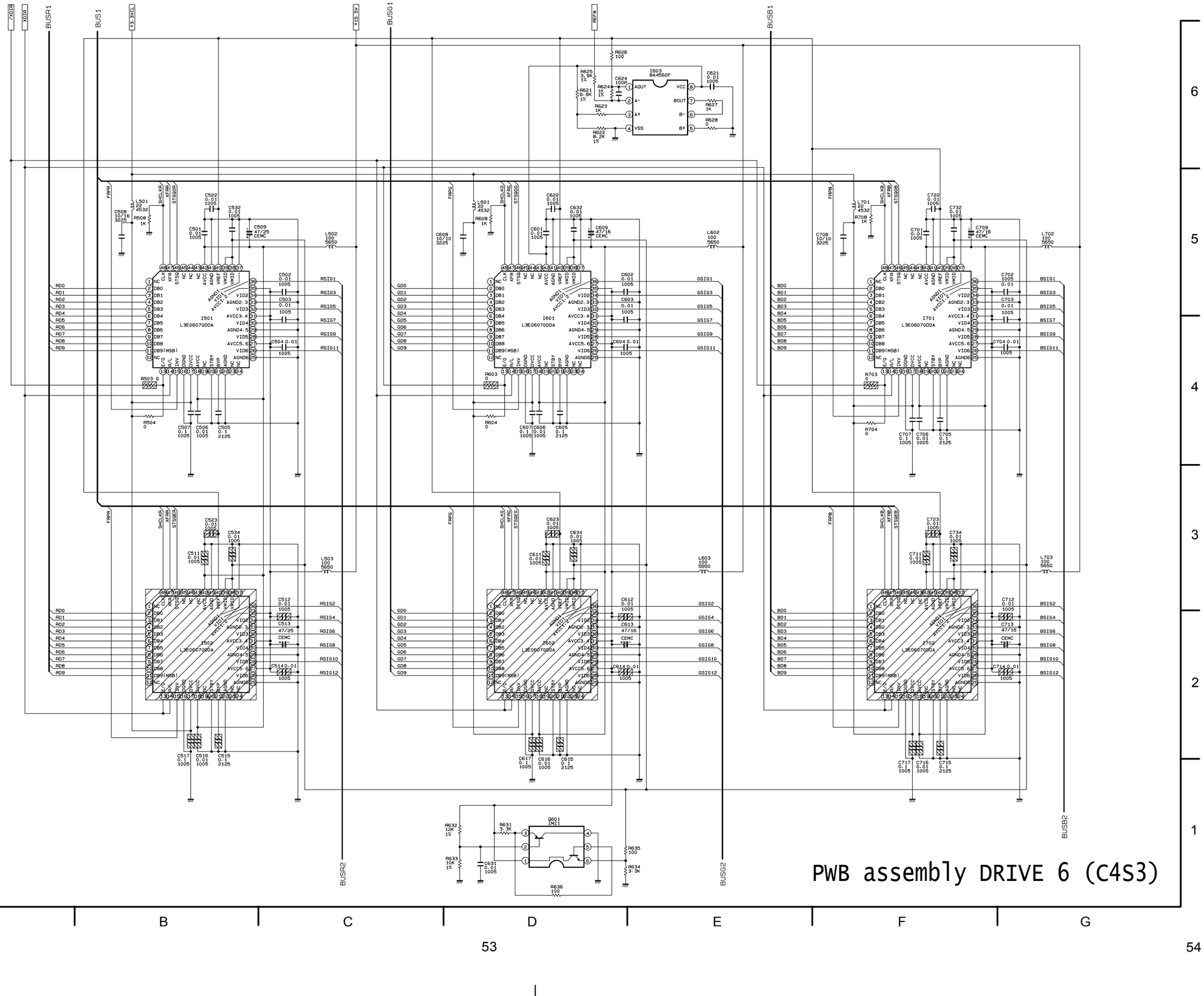
# CP-S370W

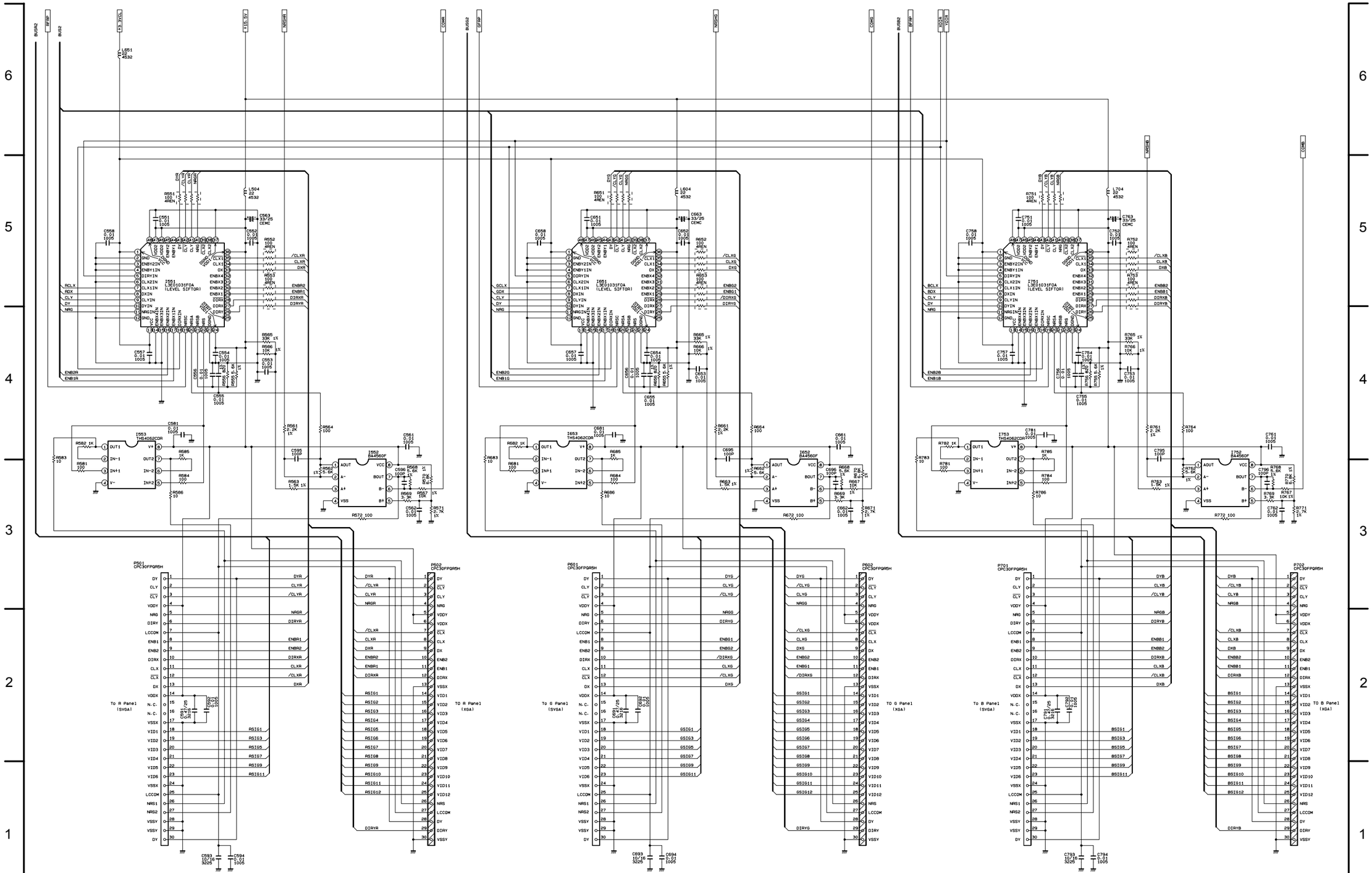



47 48

# PWB assembly DRIVE 4 (C4S3)

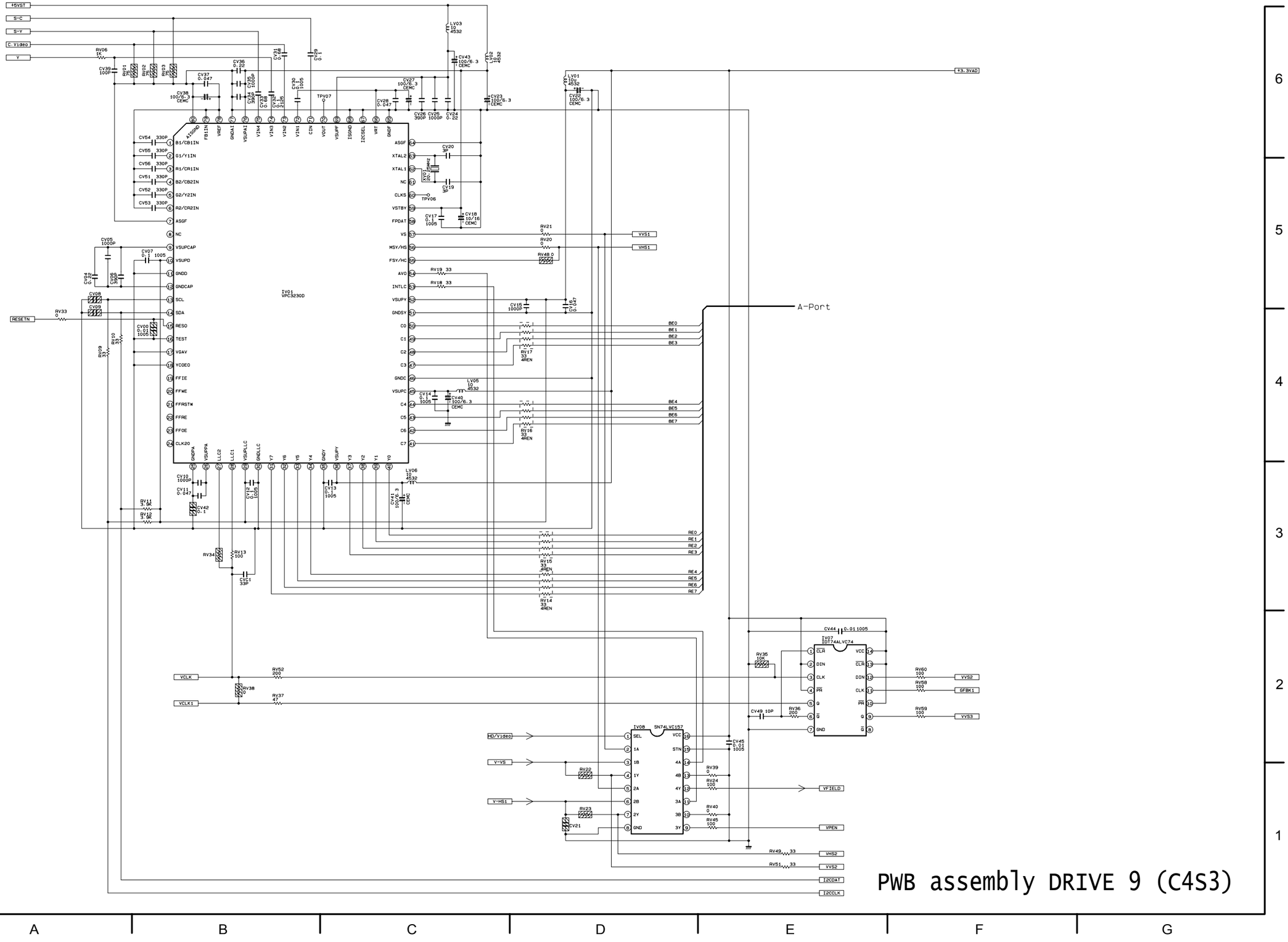

DATA2
CLK2
CS2
BUS3
L402 NFM60R 3216
L401 NFM60R 3216
VDD1
VDD2
+3.3VCL
I451 BA25BC0FP +2.5V
C451 0.1 1005
+C453 100/6.3 CEMC
C401 10/16 3225
C402 10/16 3225
C420 0.01 1005
R428 0
R427 0
R426 10K 4REN
R464 1K
R465 1K
C419 0.01 1005
R462 1K
R463 1K
R460 1K
R461 1K
C418 0.01 1005
C430 0.33 3216
I402 RN5VD26CA-TR
OUT
VDD
GND
CP
NC
R430 100
C431 0.01 1005
C417 0.01 1005
R425 10K 4REN
R424 10K 4REN
R401 0 4REN
R402 10K
COLOR-U
DHS
DVS
H:OFF L:ON
C403 0.01 1005
C404 0.01 1005
C405 0.01 1005
C406 0.01 1005
C407 0.01 1005
C408 0.01 1005
C409 0.01 1005
C410 0.01 1005
C411 0.01 1005
C412 0.01 1005
C413 0.01 1005
C414 0.01 1005
C415 0.01 1005
C416 0.01 1005
DCLK
R440 0
R441 0
R443 100
DIRY
DIRX
/XDIR
XDIR
YDIR
I403 74LV04A
R442 1K
R445 100
R444 100
R446 100
R447 100
R448 100
R449 1K
C440 0.01 1005
R404 56 4REN
R405 56 4REN
R406 56 4REN
R407 100
R408 100 4REN
R409 100 4REN
R466 100
R467 100
R410 56 4REN
R411 56 4REN
R412 56 4REN
R413 100
R414 100 4REN
R415 100 4REN
R416 56
R417 56 4REN
R423 100 4REN
R422 100 4REN
R468 100
R421 100 4REN
R420 100
R419 56 4REN
R418 56
SHCLKR
XFRR
STSQER
STSQOR
FRPR
ENB1R
ENB2R
RDX
RCLX
I401
L3E07050K0A
TEST4
TEST3
TEST2
TEST1
TEST0
SELECT
HSYNC
VSYNC
HRESETO
VRESETO
HPLL
DCLK
CLP1
CLP2
SHENB
SCS
SCLK
SDATA
ENBY2
ENBY1
CLYOUT
DYOUT
NRG
CLXOUTB
DXOUTB
ENBX4B
ENBX3B
ENBX2B
ENBX1B
FRPB
STSQOB
STSQEB
XFRB
SHCLKB
CLY
DY
NRG
BCLX
BDX
ENB2B
ENB1B
BFRP
BUS B1
BUS G1
BUS R1
BUS1
BUS2
GFRP
AFRP
PWB assembly DRIVE 5 (C4S3)


/XDIR
XDIR
BUSR1
BUS1
+3.3VCL
+15.5V
BUSG1
REFM
BUSB1
FBRB
FBRG
FBRR
SHCLKB
SHCLKG
SHCLKR
XFRB
XFRG
XFRR
STSGDB
STSGDG
STSGDR
I501
I601
I701
L3E06070D0A
I603
BA4560F
Q601
IMZ1
BUSR2
BUSG2
BUSB2
PWB assembly DRIVE 6 (C4S3)

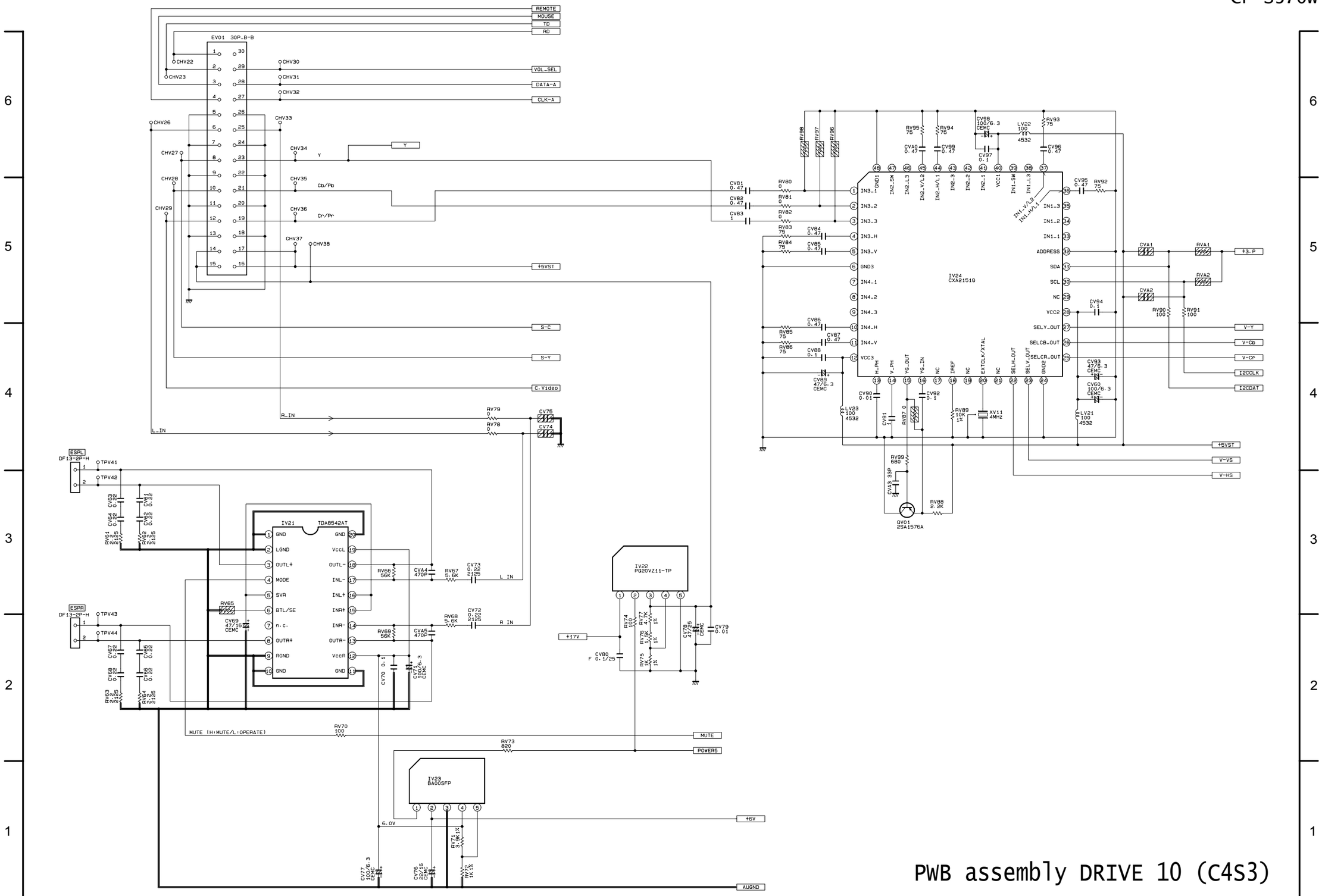

PWB assembly DRIVE 7 (C4S3)
I651 LSE61031FQA (LEVEL SIFTOR)
I652 BA4560F
I653 THS4062CDR
P501 CPC30FPGRSH
P502 CPC30FPGRSH
To A Panel (SVGA)
TO A Panel (XGA)
I651 LSE61031FQA (LEVEL SIFTOR)
I652 BA4560F
I653 THS4062CDR
P601 CPC30FPGRSH
P602 CPC30FPGRSH
To G Panel (SVGA)
TO G Panel (XGA)
I751 LSE61031FQA (LEVEL SIFTOR)
I752 BA4560F
I753 THS4062CDR
P701 CPC30FPGRSH
P702 CPC30FPGRSH
To B Panel (SVGA)
TO B Panel (XGA)

55 56

PWB assembly DRIVE 8 (C4S3)




PWB assembly DRIVE 9 (C4S3)




PWB assembly DRIVE 10 (C4S3)

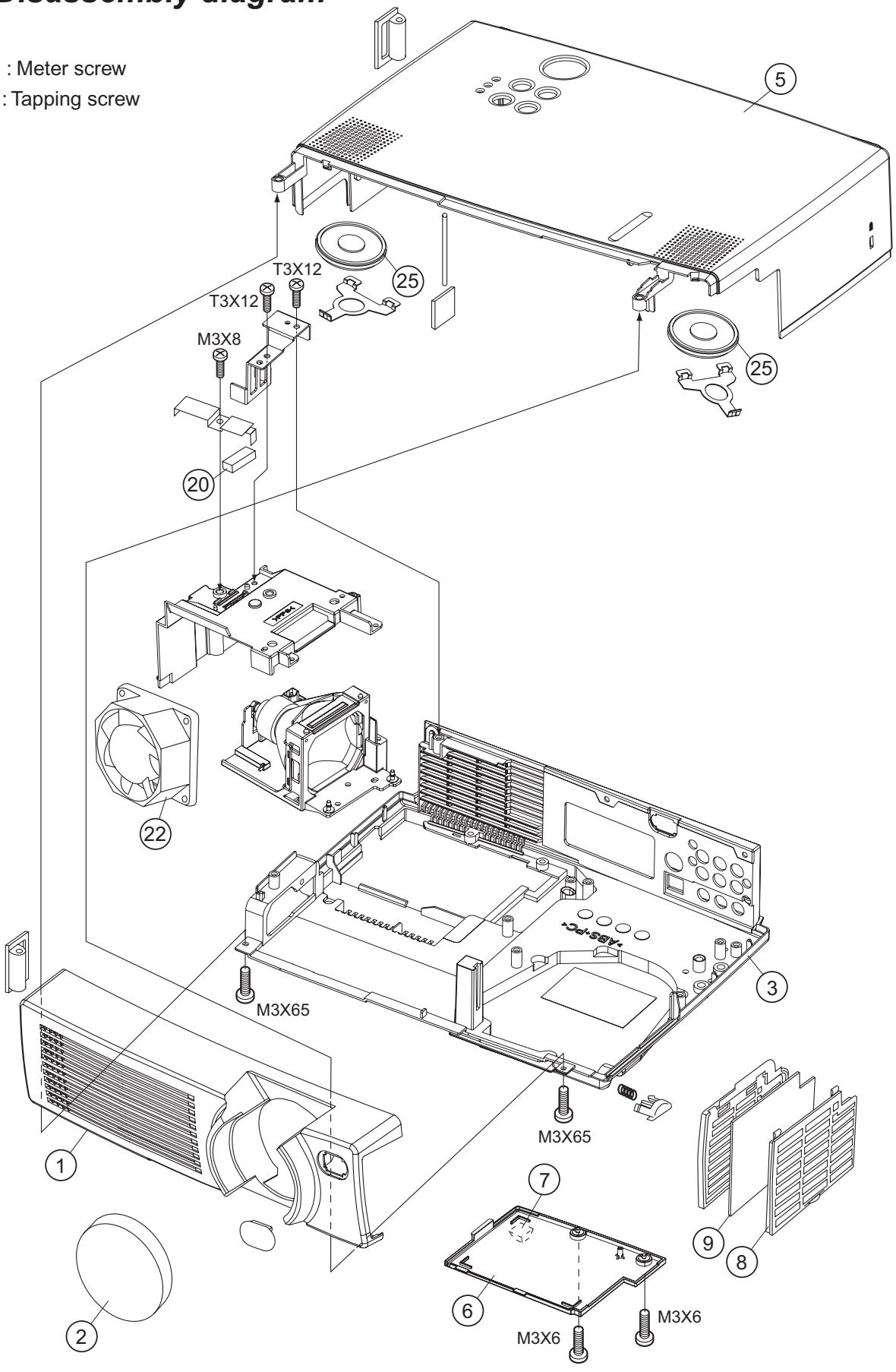
# *MEMO*

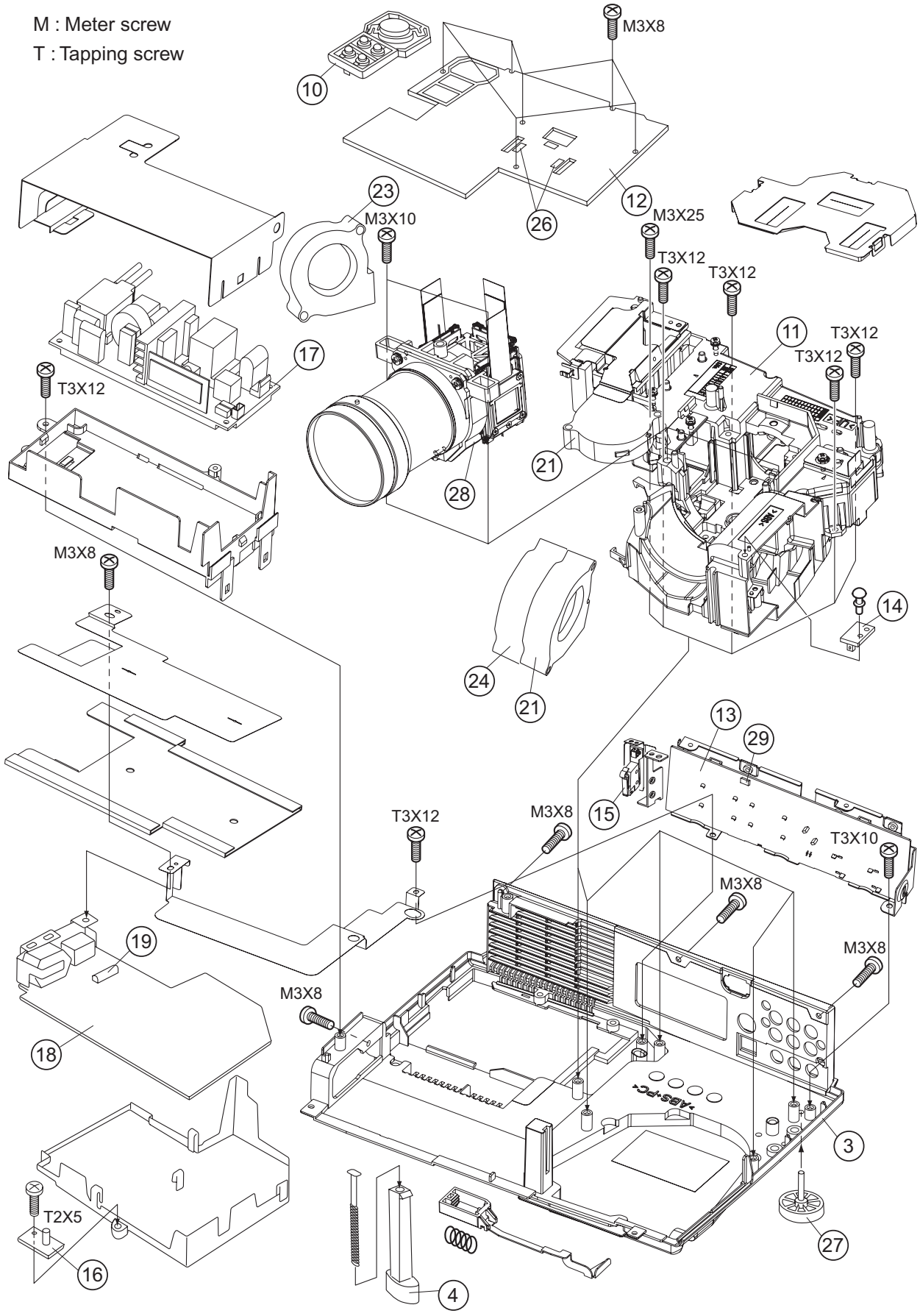


*MEMO*

## 11. Disassembly diagram

M : Meter screw
T : Tapping screw




M : Meter screw
T : Tapping screw
M3X8
10
12
26
23
M3X10
M3X25
T3X12
T3X12
11
T3X12
T3X12
17
T3X12
28
21
M3X8
14
24
21
13
29
15
T3X12
M3X8
T3X10
M3X8
M3X8
M3X8
19
18
3
T2X5
16
27
4

# THE UPDATED PARTS LIST

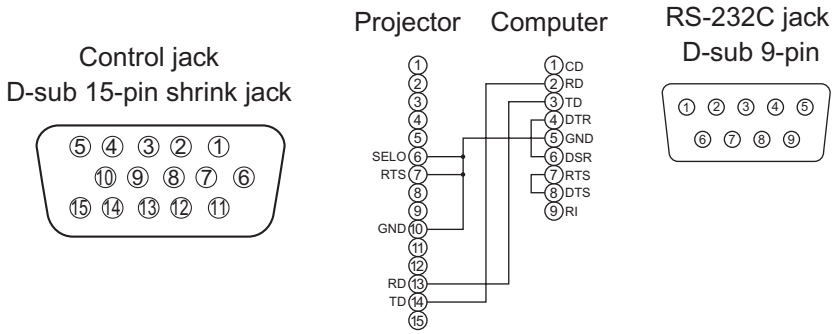
# FOR THIS MODEL IS

# AVAILABLE ON ESTA

# 13. RS-232C communication

(1) Turn off the projector and computer power supplies and connect with the RS-232C cable.

(2) Turn on the computer power supply and, after the computer has started up, turn on the projector power supply.




**Communications setting**

19200bps, 8N1

**1 Protocol**

Consist of header (7 bytes) + command data (6 bytes).

**2 Header**

BE + EF + 03 + 06 + 00 + CRC_low + CRC_high.

CRC_low : Lower byte of CRC flag for command data.

CRC_high : Upper byte of CRC flag for command data.

**3 Command data**

Command data chart

| byte_0 | byte_1 | byte_2 | byte_3 | byte_4 | byte_5 |
|---|---|---|---|---|---|
| Action | | Type | | Setting code | |
| low | high | low | high | low | high |

Action (byte_0 - 1)

| Action | Classification | Content |
|---|---|---|
| 1 | SET | Change setting to desired value. |
| 2 | GET | Read projector internal setup value. |
| 4 | INCREMENT | Increment setup value by 1. |
| 5 | DECREMENT | Decrement setup value by 1. |
| 6 | EXECUTE | Run a command. |

**Requesting projector status (Get command)**

(1) Send the request code Header + Command data (‘02H’+‘00H’+ type (2 bytes) +‘00H’+‘00H’) from the computer to the projector.

(2) The projector returns the response code ‘1DH’+ data (2 bytes) to the computer.

**Changing the projector settings (Set command)**

(1) Send the setting code Header + Command data (‘01H’+‘00H’+ type (2 bytes) + setting code (2 bytes)) from the computer to the projector.

(2) The projector changes the setting based on the above setting code.

(3) The projector returns the response code ‘06H’ to the computer.

**Using the projector default settings (Reset Command)**

(1) The computer sends the default setting code Header + Command data (‘06H’+‘00H’+ type (2 bytes) +‘00H’+‘00H’) to the projector.

(2) The projector changes the specified setting to the default value.

(3) The projector returns the response code ‘06H’ to the computer.

**Increasing the projector setting value (Increment command)**

(1) The computer sends the increment code Header + Command data (‘04H’+‘00H’+ type (2 bytes) +‘00H’+‘00H’) to the projector.

(2) The projector increases the setting value on the above setting code.

(3) The projector returns the response code ‘06H’ to the computer.

**Decreasing the projector setting value (Decrement command)**

(1) The computer sends the decrement code Header + Command data (‘05H’+‘00H’+ type (2 bytes) +‘00H’+‘00H’) to the projector.

(2) The projector decreases the setting value on the above setting code.

(3) The projector returns the response code ‘06H’ to the computer.

**When a command sent by the projector cannot be understood by the computer**

When the command sent by the projector cannot be understood, the error command ‘15H’ is returned by the computer. Some times, the projector ignores RS-232C commands during other works. If the error command ‘15H’ is returned, please send the same command again.

**When data sent by the projector cannot be practice**

When the command sent by the projector cannot be practiced, the error code ‘1cH’ +‘xxxxH’ is returned.

When the data length is greater than indicated by the data length code, the projector will ignore the excess data code. Conversely, when the data length is shorter than indicated by the data length code, an error code will be returned to the projector.

## NOTE:

- Operation cannot be guaranteed when the projector receives an undefined command or data.
- Provide an interval of at least 40ms between the response code and any other code.
- The projector outputs test data when the power supply is switched ON, and when the lamp is lit. Ignore this data.
- Commands are not accepted during warm-up.

# Command data chart

| Names | Operation type | | Header | CRC | Command data | | |
|---|---|---|---|---|---|---|---|
| | | | | | Action | Type | Setting code |
| Blank Color | Set | Red | BE EF 03 06 00 | 3B D3 | 01 00 | 00 30 | 00 00 |
| | | Orange | BE EF 03 06 00 | AB D2 | 01 00 | 00 30 | 01 00 |
| | | Green | BE EF 03 06 00 | 5B D2 | 01 00 | 00 30 | 02 00 |
| | | Blue | BE EF 03 06 00 | CB D3 | 01 00 | 00 30 | 03 00 |
| | | Purple | BE EF 03 06 00 | FB D1 | 01 00 | 00 30 | 04 00 |
| | | White | BE EF 03 06 00 | 6B D0 | 01 00 | 00 30 | 05 00 |
| | | Black | BE EF 03 06 00 | 9B D0 | 01 00 | 00 30 | 06 00 |
| | Get | | BE EF 03 06 00 | 08 D3 | 02 00 | 00 30 | 00 00 |
| Mirror | Set | Normal | BE EF 03 06 00 | C7 D2 | 01 00 | 01 30 | 00 00 |
| | | H Inverse | BE EF 03 06 00 | 57 D3 | 01 00 | 01 30 | 01 00 |
| | | V Inverse | BE EF 03 06 00 | A7 D3 | 01 00 | 01 30 | 02 00 |
| | | H&V Inverse | BE EF 03 06 00 | 37 D2 | 01 00 | 01 30 | 03 00 |
| | Get | | BE EF 03 06 00 | F4 D2 | 02 00 | 01 30 | 00 00 |
| Freeze | Set | Normal | BE EF 03 06 00 | 83 D2 | 01 00 | 02 30 | 00 00 |
| | | Freeze | BE EF 03 06 00 | 13 D3 | 01 00 | 02 30 | 01 00 |
| | Get | | BE EF 03 06 00 | B0 D2 | 02 00 | 02 30 | 00 00 |
| Menu Color | Set | Red | BE EF 03 06 00 | 7F D3 | 01 00 | 03 30 | 00 00 |
| | | Orange | BE EF 03 06 00 | EF D2 | 01 00 | 03 30 | 01 00 |
| | | Green | BE EF 03 06 00 | 1F D2 | 01 00 | 03 30 | 02 00 |
| | | Blue | BE EF 03 06 00 | 8F D3 | 01 00 | 03 30 | 03 00 |
| | | Purple | BE EF 03 06 00 | BF D1 | 01 00 | 03 30 | 04 00 |
| | | Transparent | BE EF 03 06 00 | 2F D0 | 01 00 | 03 30 | 05 00 |
| | | Gray | BE EF 03 06 00 | DF D0 | 01 00 | 03 30 | 06 00 |
| | Get | | BE EF 03 06 00 | 4C D3 | 02 00 | 03 30 | 00 00 |
| Startup | Set | Turn ON | BE EF 03 06 00 | 0B D2 | 01 00 | 04 30 | 00 00 |
| | | Turn OFF | BE EF 03 06 00 | 9B D3 | 01 00 | 04 30 | 01 00 |
| | Get | | BE EF 03 06 00 | 38 D2 | 02 00 | 04 30 | 00 00 |
| Language | Set | English | BE EF 03 06 00 | F7 D3 | 01 00 | 05 30 | 00 00 |
| | | Français | BE EF 03 06 00 | 67 D2 | 01 00 | 05 30 | 01 00 |
| | | Deutsch | BE EF 03 06 00 | 97 D2 | 01 00 | 05 30 | 02 00 |
| | | Español | BE EF 03 06 00 | 07 D3 | 01 00 | 05 30 | 03 00 |
| | | Italiano | BE EF 03 06 00 | 37 D1 | 01 00 | 05 30 | 04 00 |
| | | Norsk | BE EF 03 06 00 | A7 D0 | 01 00 | 05 30 | 05 00 |
| | | Nederlands | BE EF 03 06 00 | 57 D0 | 01 00 | 05 30 | 06 00 |
| | | Português | BE EF 03 06 00 | C7 D1 | 01 00 | 05 30 | 07 00 |
| | | Japanese | BE EF 03 06 00 | 37 D4 | 01 00 | 05 30 | 08 00 |
| | Get | | BE EF 03 06 00 | C4 D3 | 02 00 | 05 30 | 00 00 |

# Command data chart

| Names | Operation type | | Header | CRC | Command data | | |
|---|---|---|---|---|---|---|---|
| | | | | | Action | Type | Setting code |
| Magnify | Get | | BE EF 03 06 00 | 7C D2 | 02 00 | 07 30 | 00 00 |
| | Increment | | BE EF 03 06 00 | 1A D2 | 04 00 | 07 30 | 00 00 |
| | Decrement | | BE EF 03 06 00 | CB D3 | 05 00 | 07 30 | 00 00 |
| Auto off | Get | | BE EF 03 06 00 | 08 86 | 02 00 | 10 31 | 00 00 |
| | Increment | | BE EF 03 06 00 | 6E 86 | 04 00 | 10 31 | 00 00 |
| | Decrement | | BE EF 03 06 00 | BF 87 | 05 00 | 10 31 | 00 00 |
| Brightness Reset | Execute | | BE EF 03 06 00 | 58 D3 | 06 00 | 00 70 | 00 00 |
| Contrast Reset | Execute | | BE EF 03 06 00 | A4 D2 | 06 00 | 01 70 | 00 00 |
| V.Position Reset | Execute | | BE EF 03 06 00 | E0 D2 | 06 00 | 02 70 | 00 00 |
| H.Position Reset | Execute | | BE EF 03 06 00 | IC D3 | 06 00 | 03 70 | 00 00 |
| H.Size Reset | Execute | | BE EF 03 06 00 | 68 D2 | 06 00 | 04 70 | 00 00 |
| Color Balance R Reset | Execute | | BE EF 03 06 00 | 94 D3 | 06 00 | 05 70 | 00 00 |
| Color Balance B Reset | Execute | | BE EF 03 06 00 | D0 D3 | 06 00 | 06 70 | 00 00 |
| Sharpness Reset | Execute | | BE EF 03 06 00 | C4 D0 | 06 00 | 09 70 | 00 00 |
| Color Reset | Execute | | BE EF 03 06 00 | 80 D0 | 06 00 | 0A 70 | 00 00 |
| Tint Reset | Execute | | BE EF 03 06 00 | 7C D1 | 06 00 | 0B 70 | 00 00 |
| Keystone_V Reset | Execute | | BE EF 03 06 00 | 08 D0 | 06 00 | 0C 70 | 00 00 |
| Auto | Execute | | BE EF 03 06 00 | 91 D0 | 06 00 | 0A 20 | 00 00 |
| Blank on/off | Set | off | BE EF 03 06 00 | FB D8 | 01 00 | 20 30 | 00 00 |
| | | on | BE EF 03 06 00 | 6B D9 | 01 00 | 20 30 | 01 00 |
| | Get | | BE EF 03 06 00 | C8 D8 | 02 00 | 20 30 | 00 00 |
| Error Status | Get | | BE EF 03 06 00 | D9 D8 | 02 00 | 20 60 | 00 00 |
| | | | (Example of Return)<br>00 00 (Normal) 01 00 (Cover-error) 02 00 (Fan-error) 03 00 (Lamp-error)<br>04 00 (Temp-error) 05 00 (Air flow-error) 06 00 (Lamp-Time-over) | | | | |
| Power | Set | OFF | BE EF 03 06 00 | 2A D3 | 01 00 | 00 60 | 00 00 |
| | | ON | BE EF 03 06 00 | BA D2 | 01 00 | 00 60 | 01 00 |
| | Get | | BE EF 03 06 00 | 19 D3 | 02 00 | 00 60 | 00 00 |
| Input Source | Set | RGB1 | BE EF 03 06 00 | FE D2 | 01 00 | 00 20 | 00 00 |
| | | RGB2 | BE EF 03 06 00 | 3E D0 | 01 00 | 00 20 | 04 00 |
| | | Video | BE EF 03 06 00 | 6E D3 | 01 00 | 00 20 | 01 00 |
| | | SVideo | BE EF 03 06 00 | 9E D3 | 01 00 | 00 20 | 02 00 |
| | | Component | BE EF 03 06 00 | AE D1 | 01 00 | 00 20 | 05 00 |
| | Get | | BE EF 03 06 00 | CD D2 | 02 00 | 00 20 | 00 00 |
| Volume | Get | | BE EF 03 06 00 | 31 D3 | 02 00 | 01 20 | 00 00 |
| | Increment | | BE EF 03 06 00 | 57 D3 | 04 00 | 01 20 | 00 00 |
| | Decrement | | BE EF 03 06 00 | 86 D2 | 05 00 | 01 20 | 00 00 |

# Command data chart

| Names | Operation type | | Header | CRC | Command data | | |
|---|---|---|---|---|---|---|---|
| | | | | | Action | Type | Setting code |
| Mute | Set | Normal | BE EF 03 06 00 | 46 D3 | 01 00 | 02 20 | 00 00 |
| | | Mute | BE EF 03 06 00 | D6 D2 | 01 00 | 02 20 | 01 00 |
| | Get | | BE EF 03 06 00 | 75 D3 | 02 00 | 02 20 | 00 00 |
| Brightness | Get | | BE EF 03 06 00 | 89 D2 | 02 00 | 03 20 | 00 00 |
| | Increment | | BE EF 03 06 00 | EF D2 | 04 00 | 03 20 | 00 00 |
| | Decrement | | BE EF 03 06 00 | 3E D3 | 05 00 | 03 20 | 00 00 |
| Contrast | Get | | BE EF 03 06 00 | FD D3 | 02 00 | 04 20 | 00 00 |
| | Increment | | BE EF 03 06 00 | 9B D3 | 04 00 | 04 20 | 00 00 |
| | Decrement | | BE EF 03 06 00 | 4A D2 | 05 00 | 04 20 | 00 00 |
| Color Balance R | Get | | BE EF 03 06 00 | 01 D2 | 02 00 | 05 20 | 00 00 |
| | Increment | | BE EF 03 06 00 | 67 D2 | 04 00 | 05 20 | 00 00 |
| | Decrement | | BE EF 03 06 00 | B6 D3 | 05 00 | 05 20 | 00 00 |
| Color Balance B | Get | | BE EF 03 06 00 | 45 D2 | 02 00 | 06 20 | 00 00 |
| | Increment | | BE EF 03 06 00 | 23 D2 | 04 00 | 06 20 | 00 00 |
| | Decrement | | BE EF 03 06 00 | F2 D3 | 05 00 | 06 20 | 00 00 |
| Keystone_V | Get | | BE EF 03 06 00 | B9 D3 | 02 00 | 07 20 | 00 00 |
| | Increment | | BE EF 03 06 00 | DF D3 | 04 00 | 07 20 | 00 00 |
| | Decrement | | BE EF 03 06 00 | 0E D2 | 05 00 | 07 20 | 00 00 |
| Aspect | Set | 4:3, Full | BE EF 03 06 00 | 9E D0 | 01 00 | 08 20 | 00 00 |
| | | 16:9 | BE EF 03 06 00 | 0E D1 | 01 00 | 08 20 | 01 00 |
| | | Small | BE EF 03 06 00 | FE D1 | 01 00 | 08 20 | 02 00 |
| | Get | | BE EF 03 06 00 | AD D0 | 02 00 | 08 20 | 00 00 |
| Display Position at 16 : 9 or Small | Set | Default | BE EF 03 06 00 | 62 D1 | 01 00 | 09 20 | 00 00 |
| | | Bottom | BE EF 03 06 00 | F2 D0 | 01 00 | 09 20 | 01 00 |
| | | Top | BE EF 03 06 00 | 02 D0 | 01 00 | 09 20 | 02 00 |
| | Get | | BE EF 03 06 00 | 51 D1 | 02 00 | 09 20 | 00 00 |
| V.Position | Get | | BE EF 03 06 00 | 0D 83 | 02 00 | 00 21 | 00 00 |
| | Increment | | BE EF 03 06 00 | 6B 83 | 04 00 | 00 21 | 00 00 |
| | Decrement | | BE EF 03 06 00 | BA 82 | 05 00 | 00 21 | 00 00 |
| H.Position | Get | | BE EF 03 06 00 | F1 82 | 02 00 | 01 21 | 00 00 |
| | Increment | | BE EF 03 06 00 | 97 82 | 04 00 | 01 21 | 00 00 |
| | Decrement | | BE EF 03 06 00 | 46 83 | 05 00 | 01 21 | 00 00 |
| H.Size | Get | | BE EF 03 06 00 | B5 82 | 02 00 | 02 21 | 00 00 |
| | Increment | | BE EF 03 06 00 | D3 82 | 04 00 | 02 21 | 00 00 |
| | Decrement | | BE EF 03 06 00 | 02 83 | 05 00 | 02 21 | 00 00 |
| H.Phase | Get | | BE EF 03 06 00 | 49 83 | 02 00 | 03 21 | 00 00 |
| | Increment | | BE EF 03 06 00 | 2F 83 | 04 00 | 03 21 | 00 00 |
| | Decrement | | BE EF 03 06 00 | FE 82 | 05 00 | 03 21 | 00 00 |

# Command data chart

| Names | Operation type | | Header | CRC | Command data | | |
|---|---|---|---|---|---|---|---|
| | | | | | Action | Type | Setting code |
| Sharpness | Get | | BE EF 03 06 00 | F1 72 | 02 00 | 01 22 | 00 00 |
| | Increment | | BE EF 03 06 00 | 97 72 | 04 00 | 01 22 | 00 00 |
| | Decrement | | BE EF 03 06 00 | 46 73 | 05 00 | 01 22 | 00 00 |
| Color | Get | | BE EF 03 06 00 | B5 72 | 02 00 | 02 22 | 00 00 |
| | Increment | | BE EF 03 06 00 | D3 72 | 04 00 | 02 22 | 00 00 |
| | Decrement | | BE EF 03 06 00 | 02 73 | 05 00 | 02 22 | 00 00 |
| Tint | Get | | BE EF 03 06 00 | 49 73 | 02 00 | 03 22 | 00 00 |
| | Increment | | BE EF 03 06 00 | 2F 73 | 04 00 | 03 22 | 00 00 |
| | Decrement | | BE EF 03 06 00 | FE 72 | 05 00 | 03 22 | 00 00 |
| Video Format | Set | Auto | BE EF 03 06 00 | 9E 75 | 01 00 | 00 22 | 0A 00 |
| | | NTSC | BE EF 03 06 00 | FE 71 | 01 00 | 00 22 | 04 00 |
| | | PAL | BE EF 03 06 00 | 6E 70 | 01 00 | 00 22 | 05 00 |
| | | SECAM | BE EF 03 06 00 | 6E 75 | 01 00 | 00 22 | 09 00 |
| | | NTSC 4.43 | BE EF 03 06 00 | 5E 72 | 01 00 | 00 22 | 02 00 |
| | | M-PAL | BE EF 03 06 00 | FE 74 | 01 00 | 00 22 | 08 00 |
| | | N-PAL | BE EF 03 06 00 | 0E 71 | 01 00 | 00 22 | 07 00 |
| | Get | | BE EF 03 06 00 | 0D 73 | 02 00 | 00 22 | 00 00 |
| HDTV | Set | 1080i | BE EF 03 06 00 | F2 73 | 01 00 | 05 22 | 00 00 |
| | | 1035i | BE EF 03 06 00 | 62 72 | 01 00 | 05 22 | 01 00 |
| | Get | | BE EF 03 06 00 | C1 73 | 02 00 | 05 22 | 00 00 |

# Command data chart

| Names | Operation type | | Header | CRC | Command data | | |
|---|---|---|---|---|---|---|---|
| | | | | | Action | Type | Setting code |
| Sync on G | Set | off | BE EF 03 06 00 | CB D0 | 01 00 | 08 30 | 01 00 |
| | | on | BE EF 03 06 00 | 5B D1 | 01 00 | 08 30 | 00 00 |
| | Get | | BE EF 03 06 00 | 68 D1 | 02 00 | 08 30 | 00 00 |
| WHISPER | Set | NORMAL | BE EF 03 06 00 | 3B 23 | 01 00 | 00 33 | 00 00 |
| | | WHISPER | BE EF 03 06 00 | AB 22 | 01 00 | 00 33 | 01 00 |
| | Get | | BE EF 03 06 00 | 08 23 | 02 00 | 00 33 | 00 00 |
| GAMMA | Set | NORMAL | BE EF 03 06 00 | C7 F0 | 01 00 | A1 30 | 00 00 |
| | | CINEMA | BE EF 03 06 00 | 57 F1 | 01 00 | A1 30 | 01 00 |
| | | DYNAMIC | BE EF 03 06 00 | A7 F1 | 01 00 | A1 30 | 02 00 |
| | Get | | BE EF 03 06 00 | F4 F0 | 02 00 | A1 30 | 00 00 |
| COLOR TEMP | Set | NORMAL | BE EF 03 06 00 | FB F5 | 01 00 | B0 30 | 00 00 |
| | | LOW | BE EF 03 06 00 | 6B F4 | 01 00 | B0 30 | 01 00 |
| | Get | | BE EF 03 06 00 | C8 F5 | 02 00 | B0 30 | 00 00 |

# *MEMO*

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